

THE IRON AGE

A Review of the Hardware, Iron and Metal Trades.

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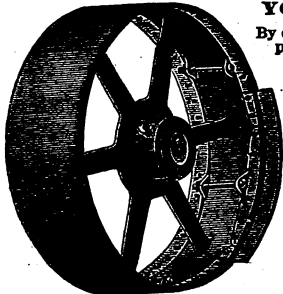
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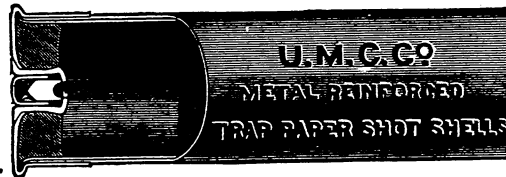
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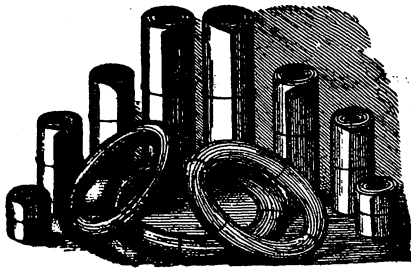
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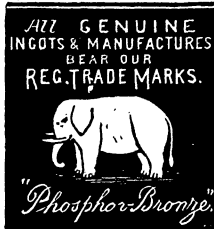
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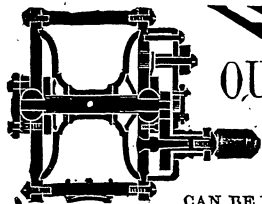
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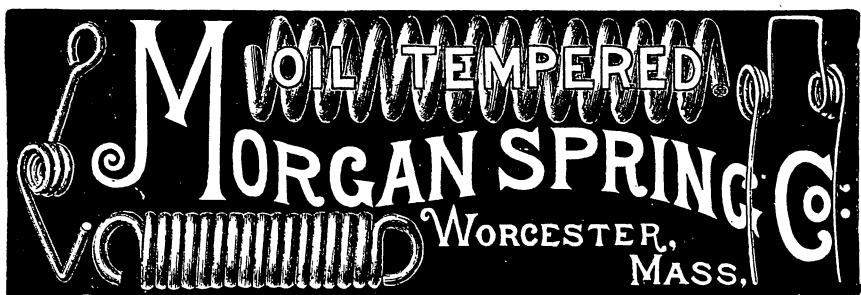


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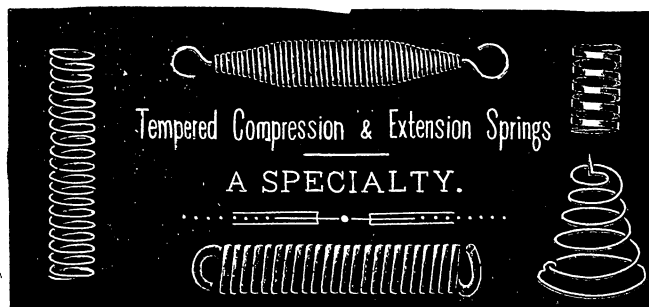


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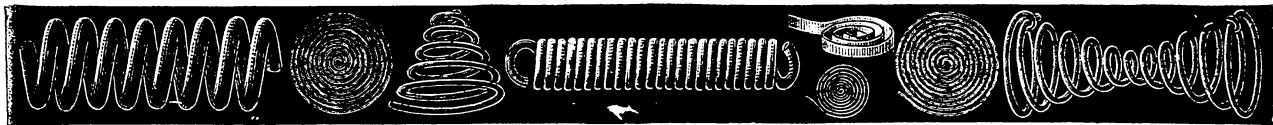
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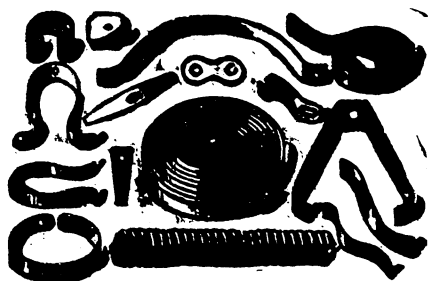
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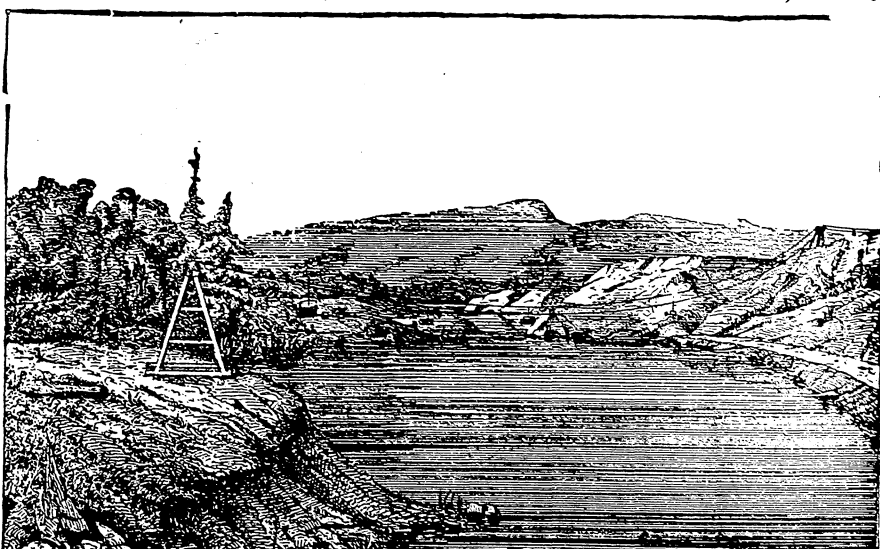


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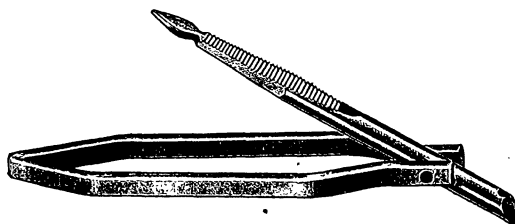
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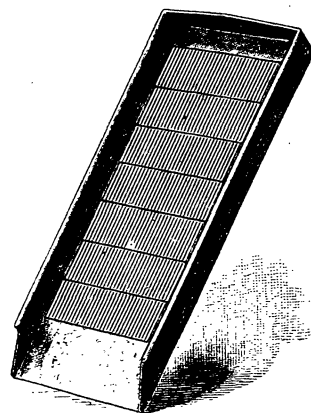
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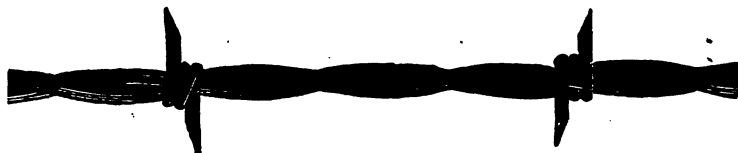
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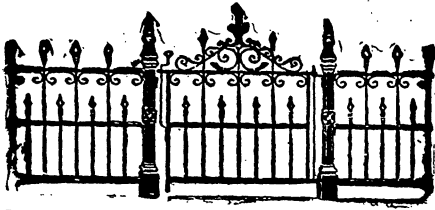
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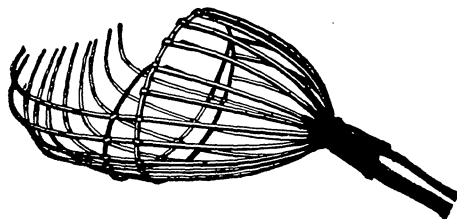
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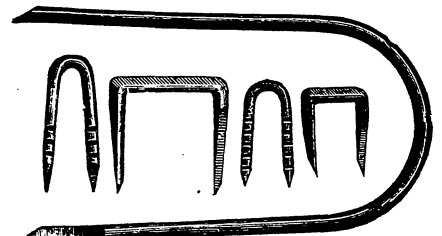
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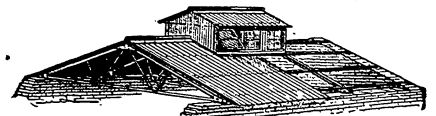


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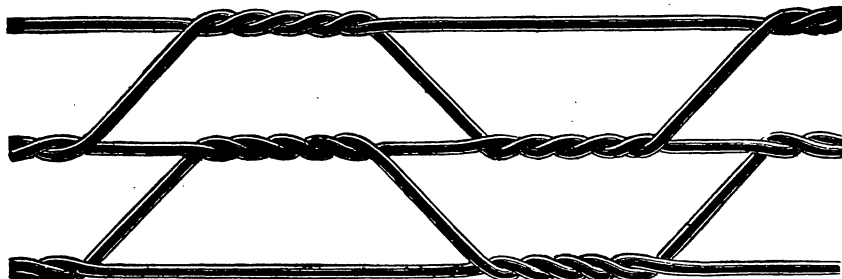


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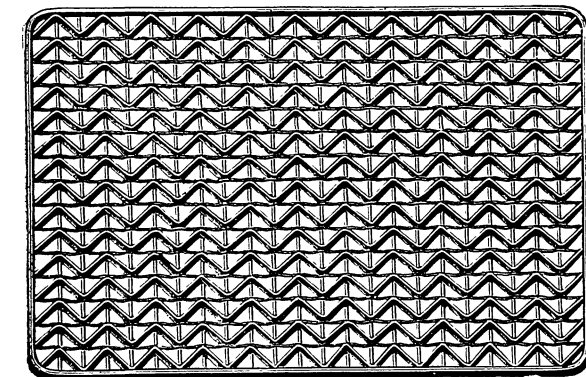
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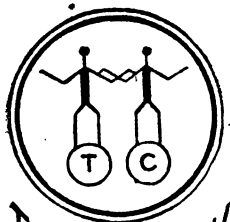
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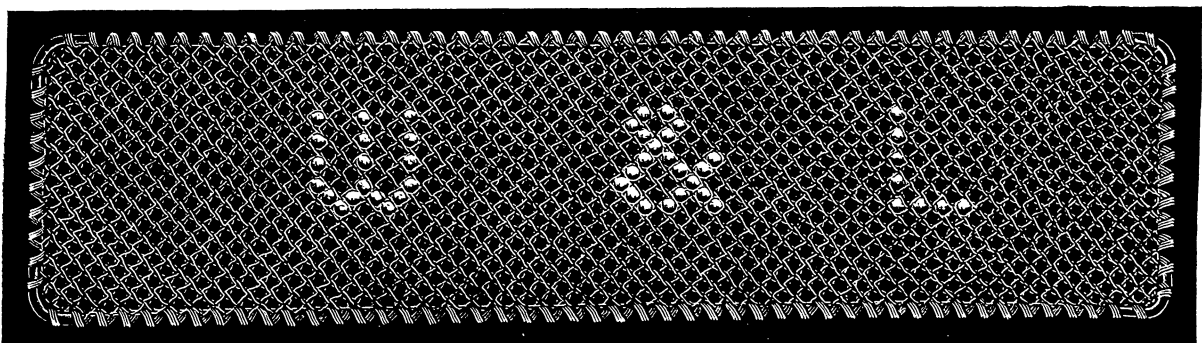
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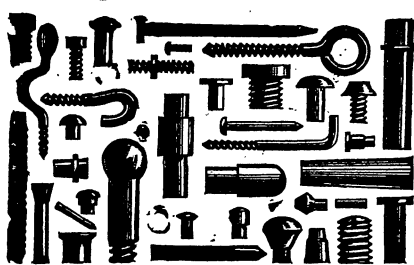
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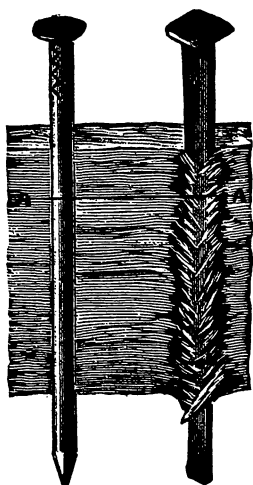
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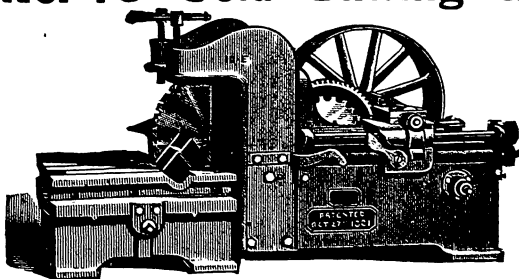
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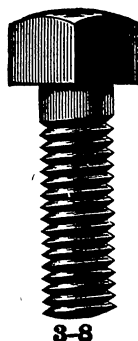
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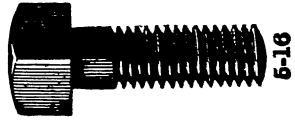
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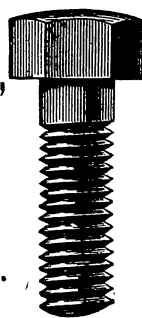
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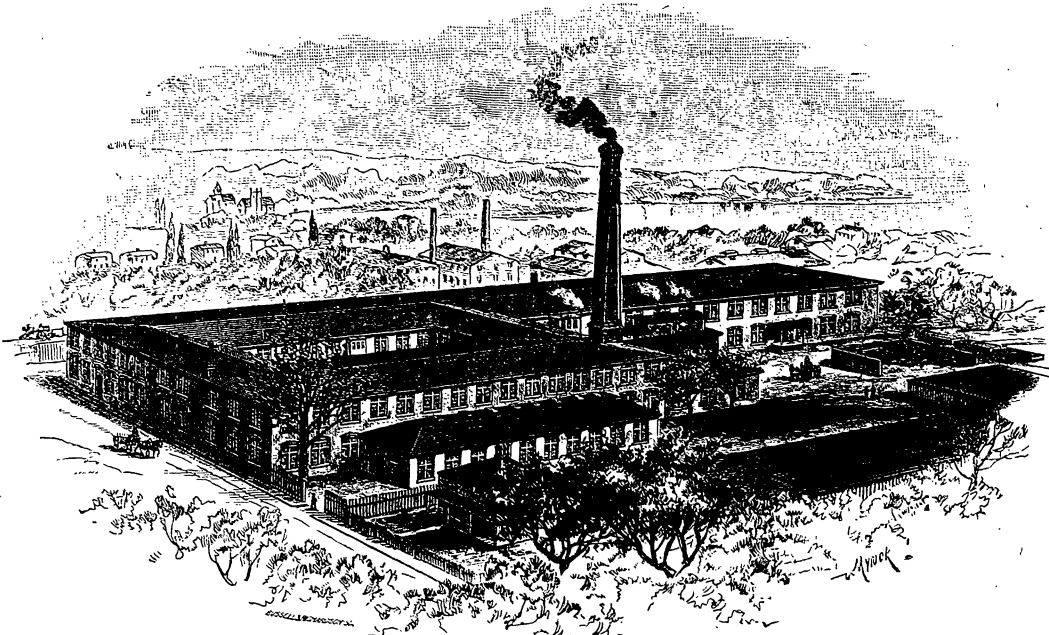
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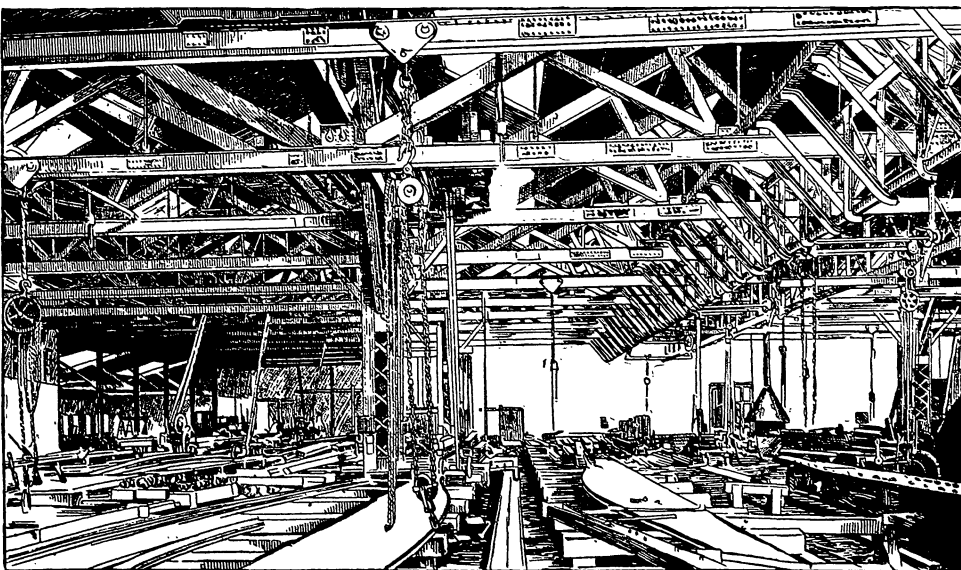
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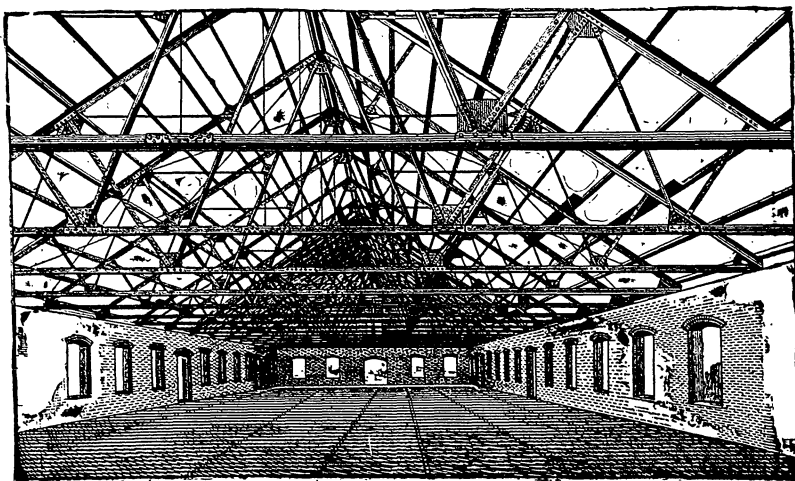
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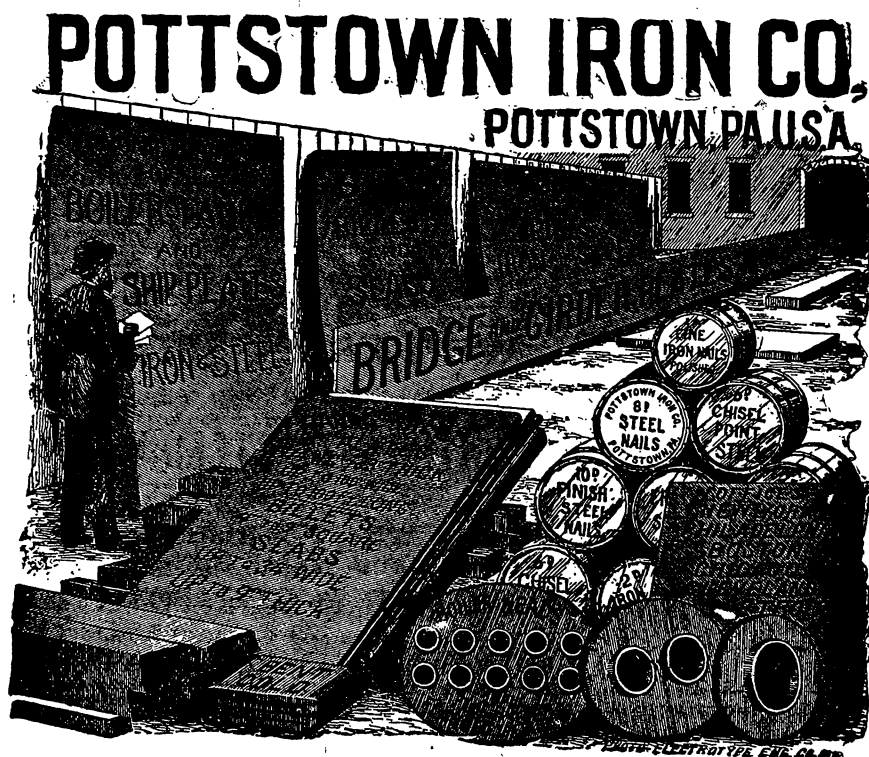
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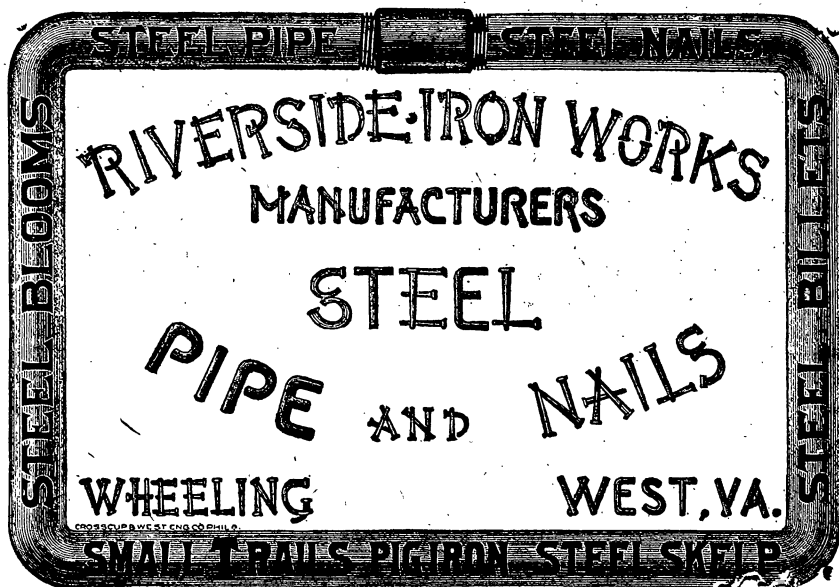
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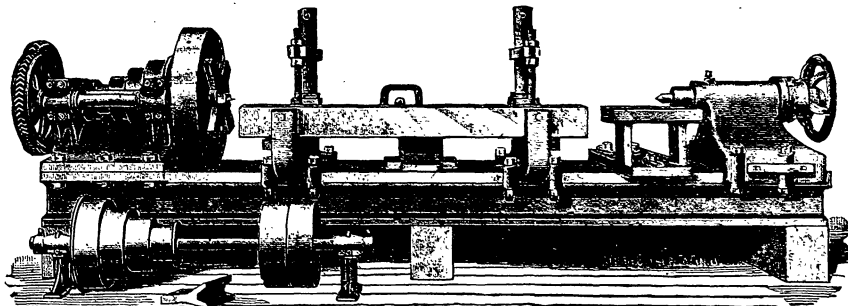
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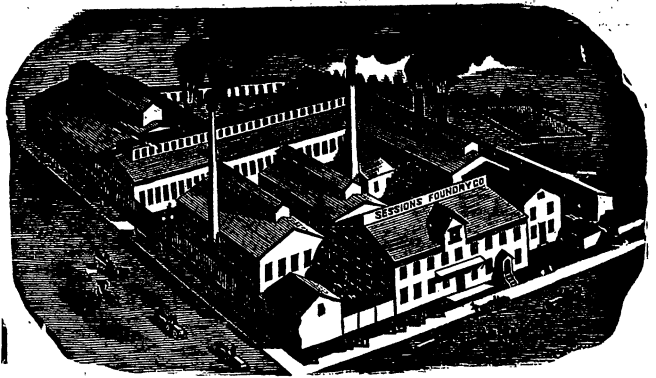
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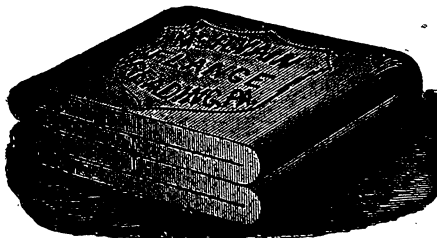
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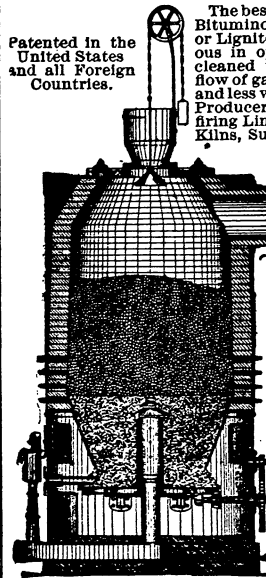
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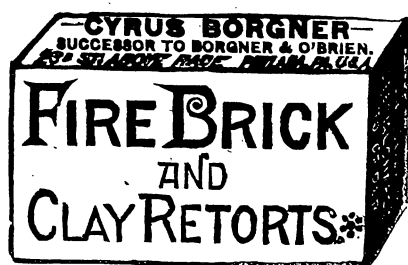
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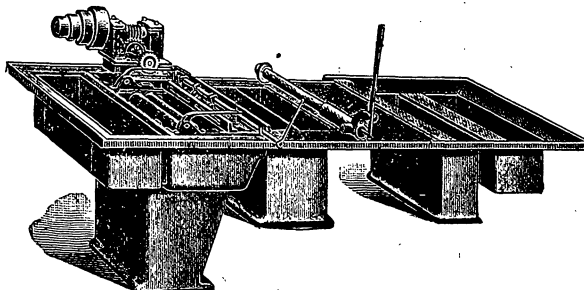
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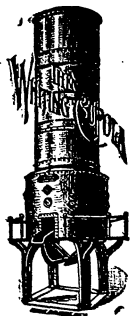
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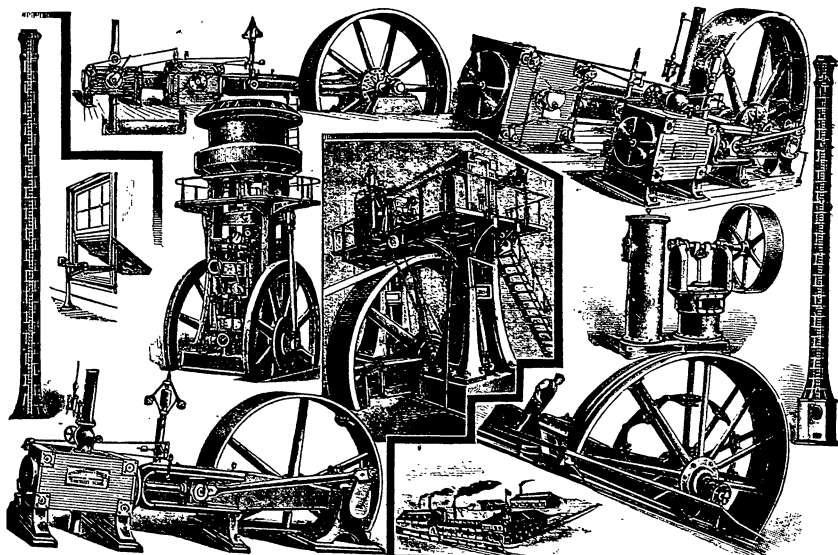
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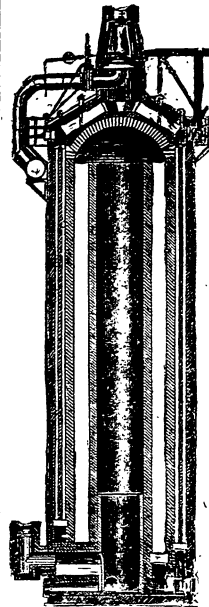
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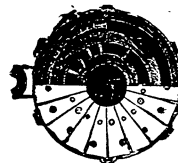
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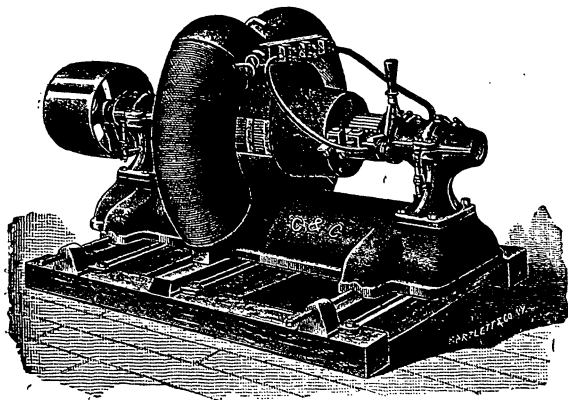
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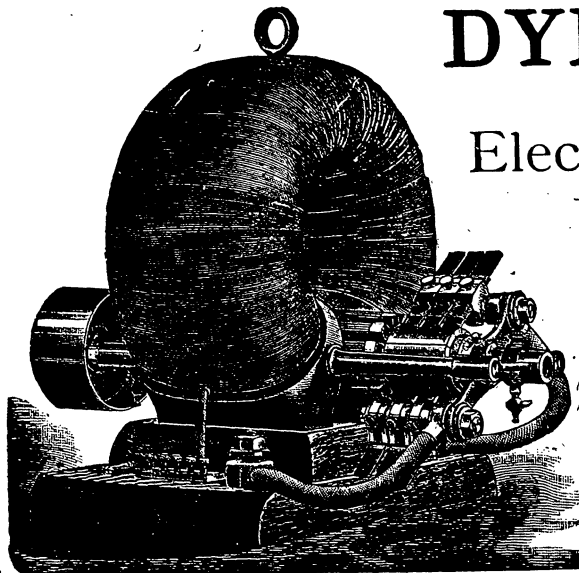
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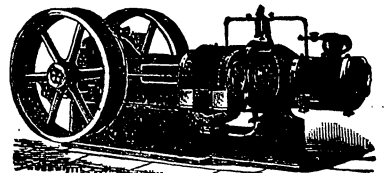
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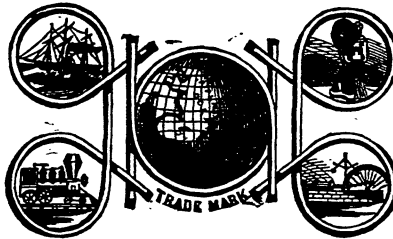
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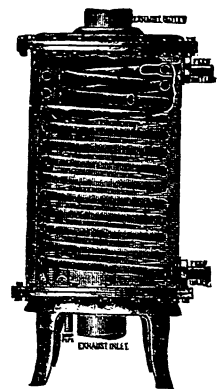
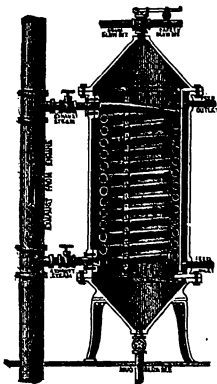
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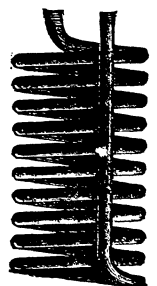
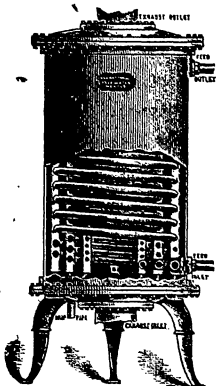


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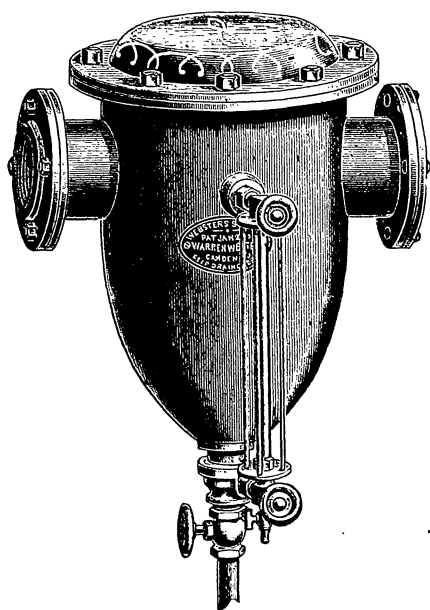
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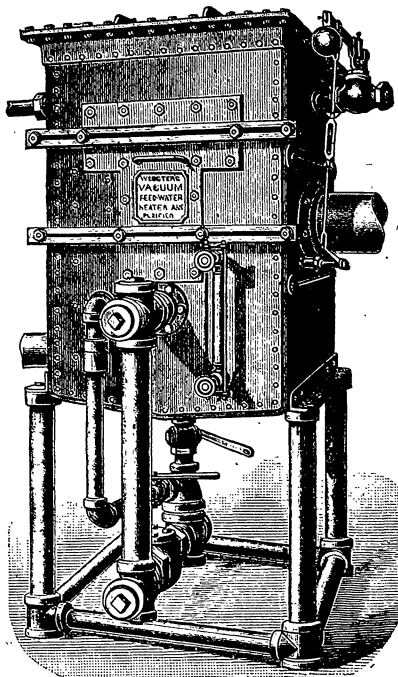
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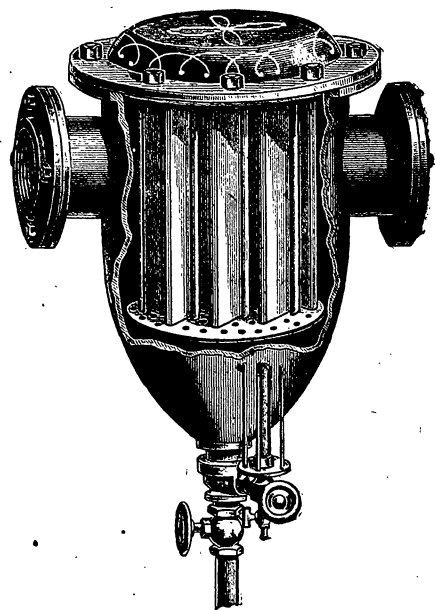
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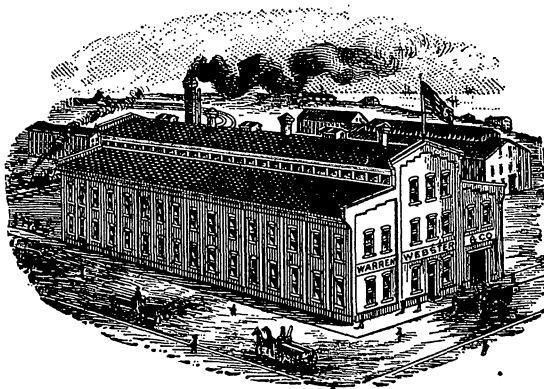
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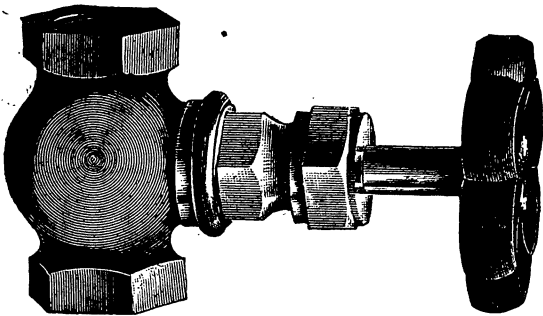
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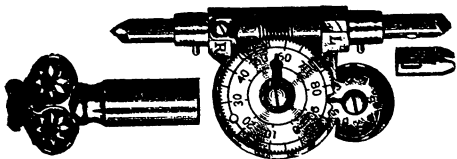
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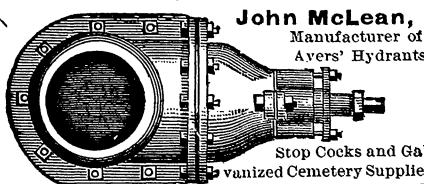
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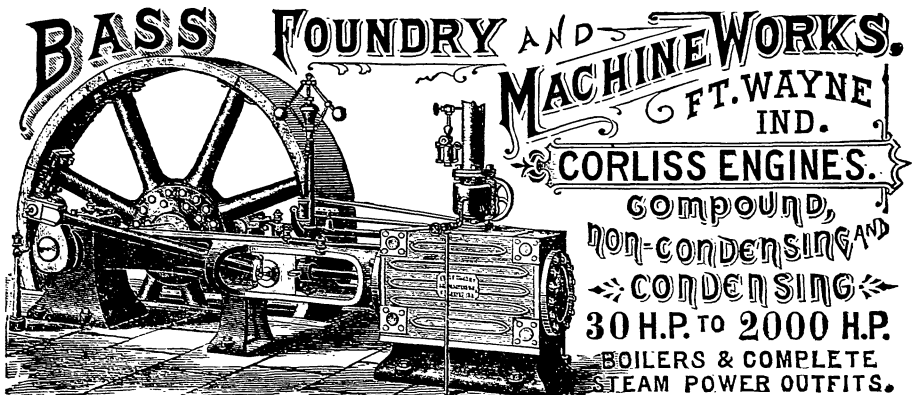


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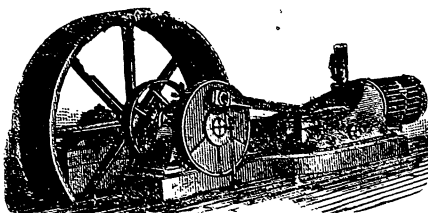
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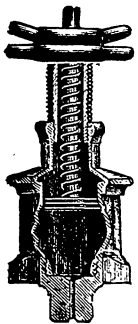
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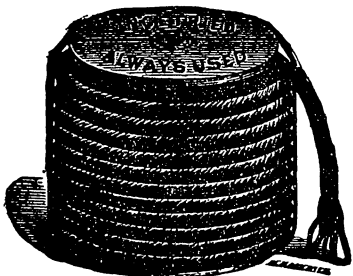
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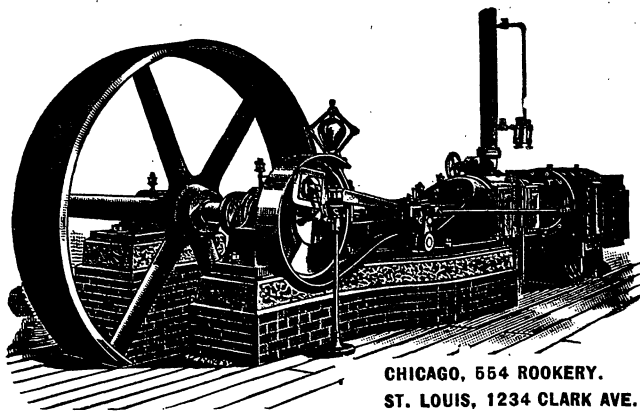
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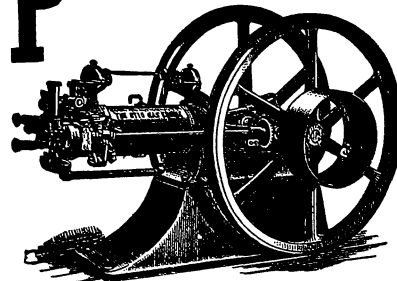
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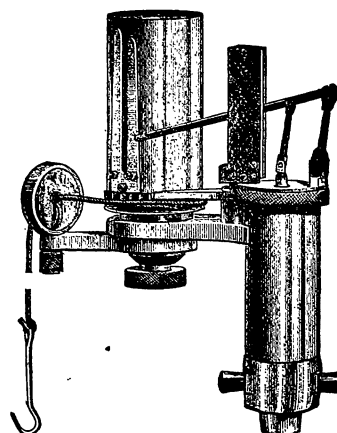
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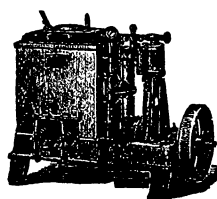
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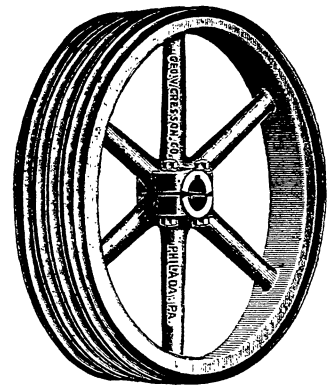


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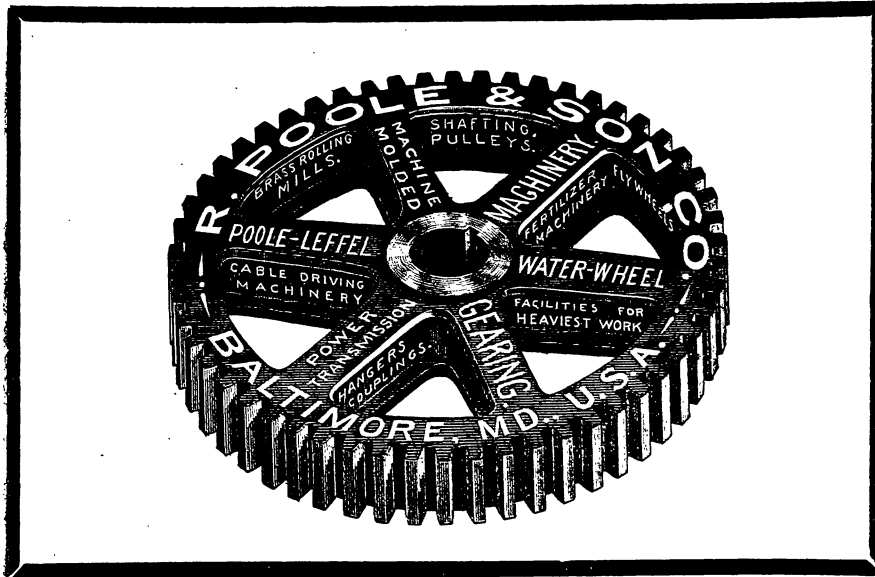
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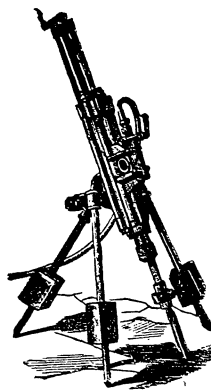
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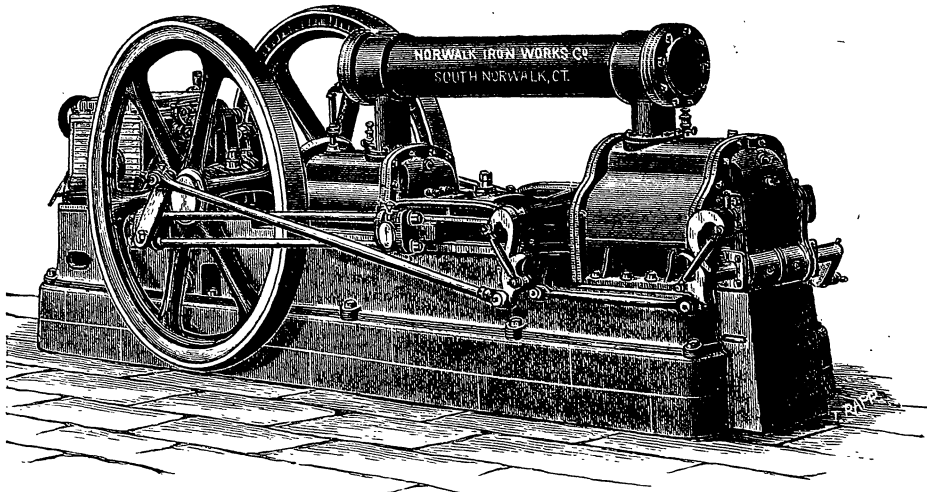
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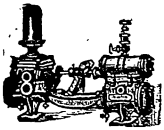
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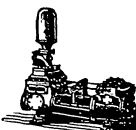
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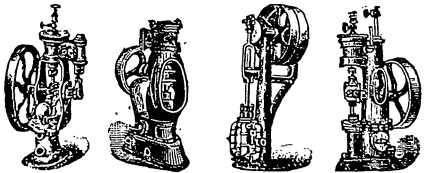
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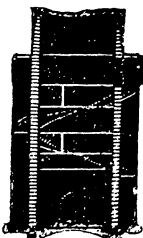
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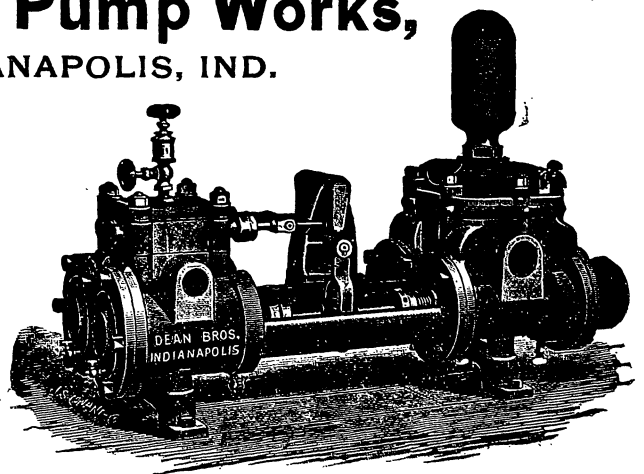
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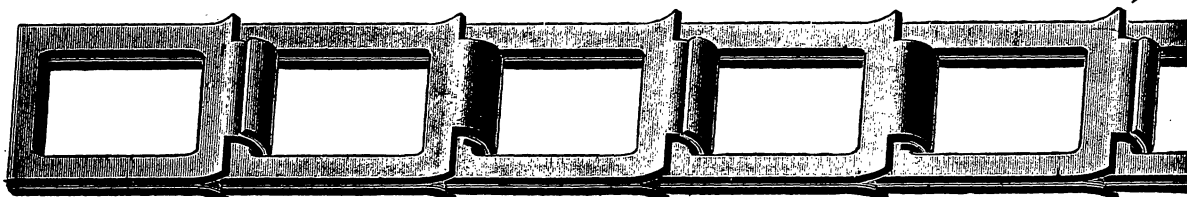
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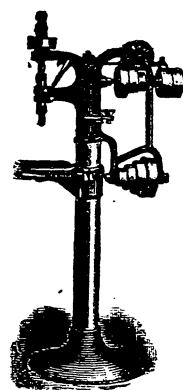
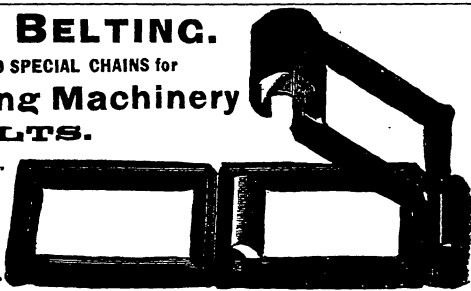
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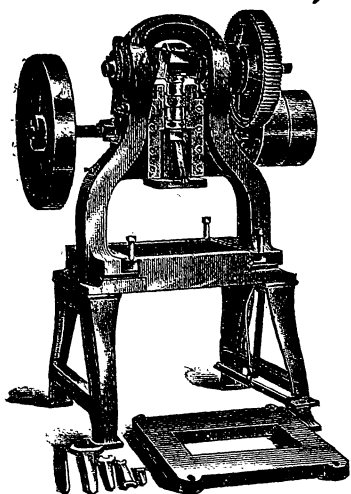
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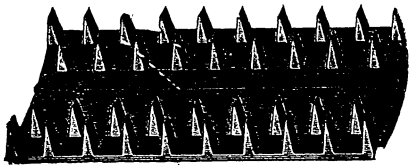
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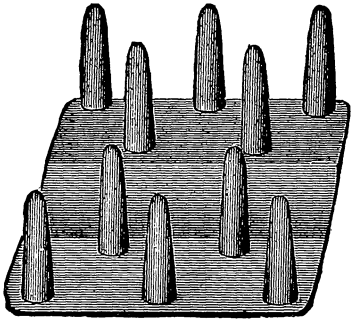
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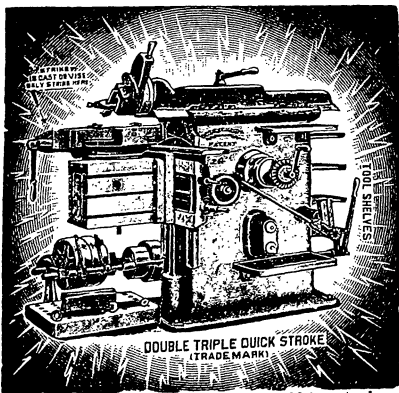
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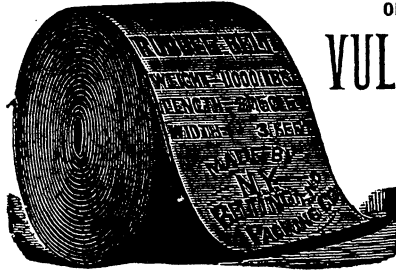
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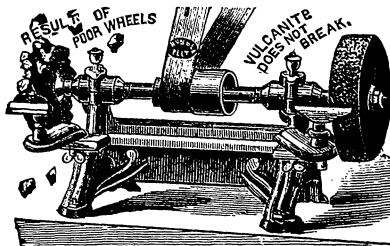
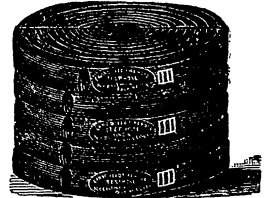
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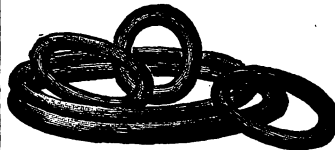
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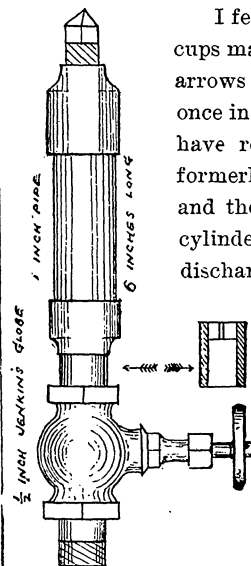
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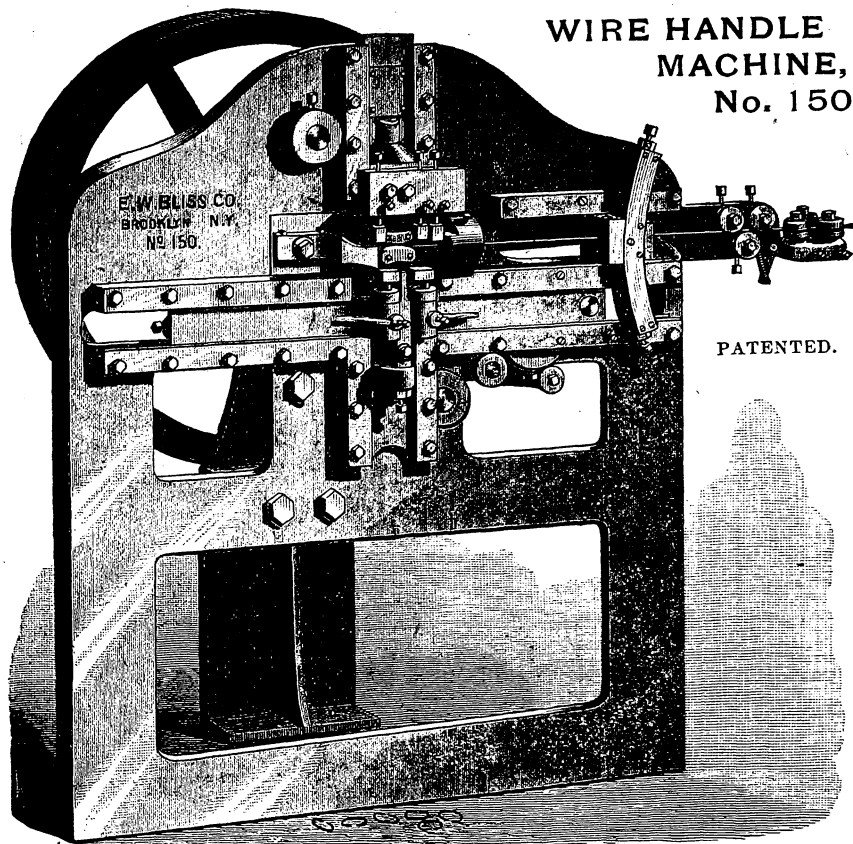
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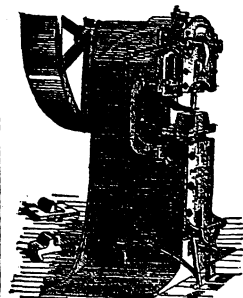
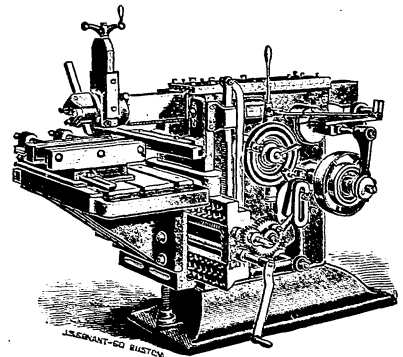
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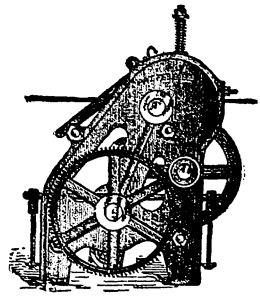
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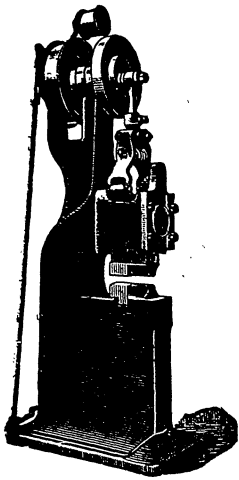
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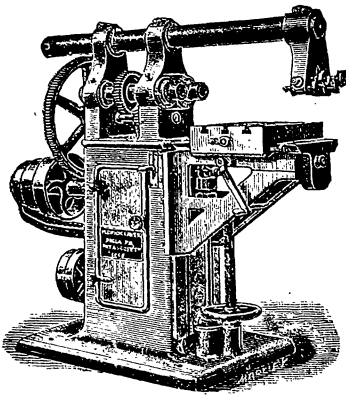
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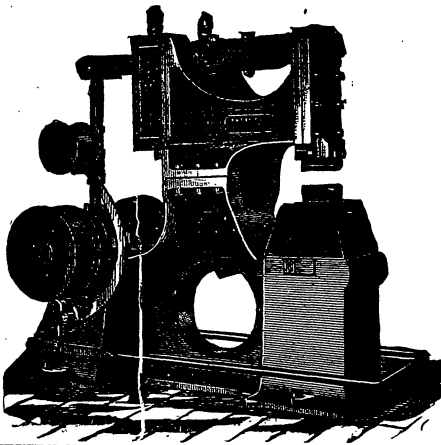
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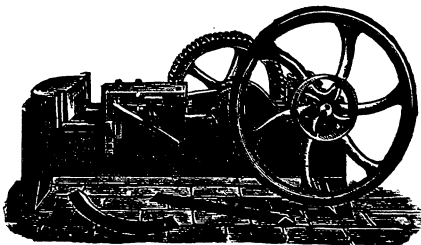
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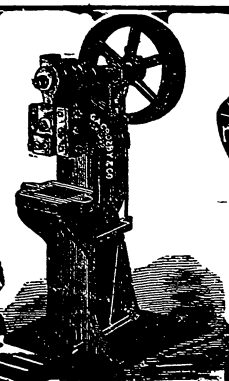
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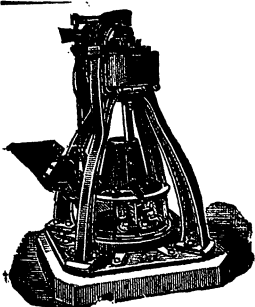


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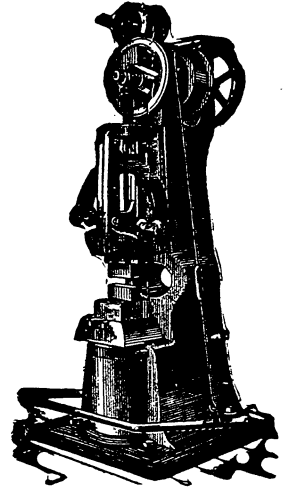
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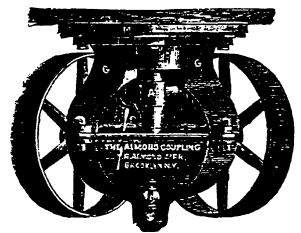
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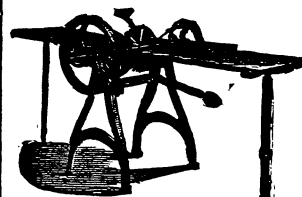
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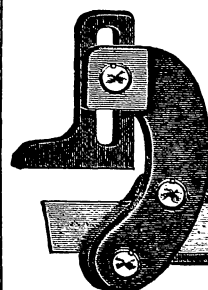
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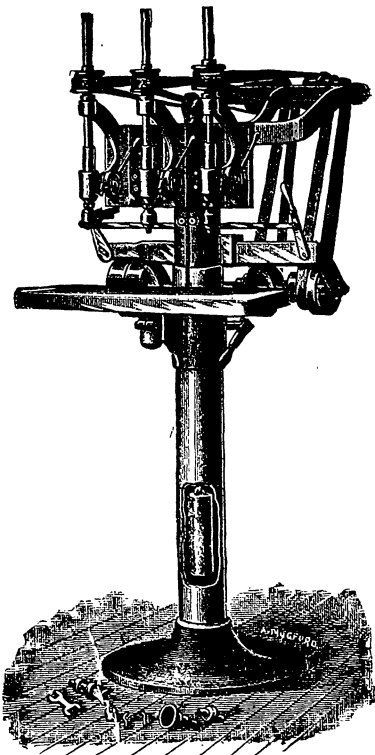
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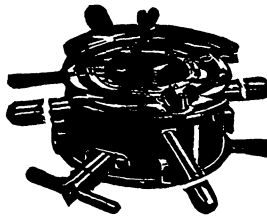
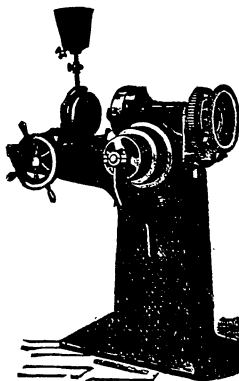
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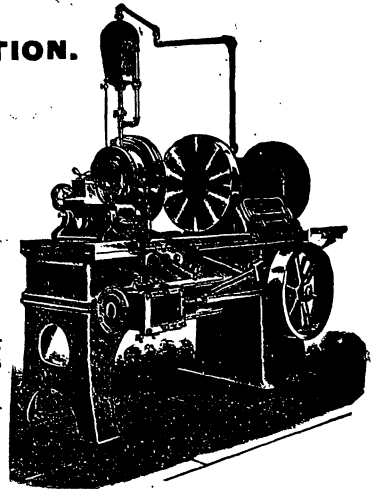
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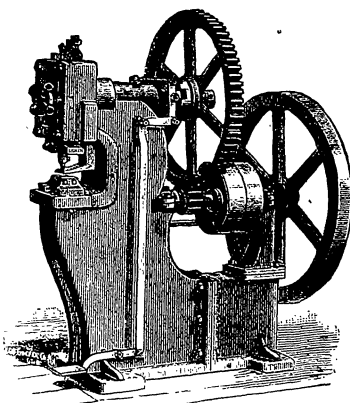


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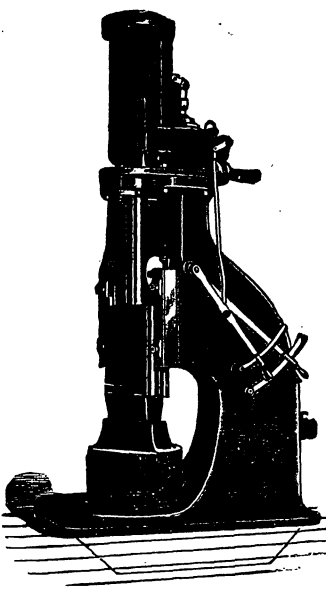
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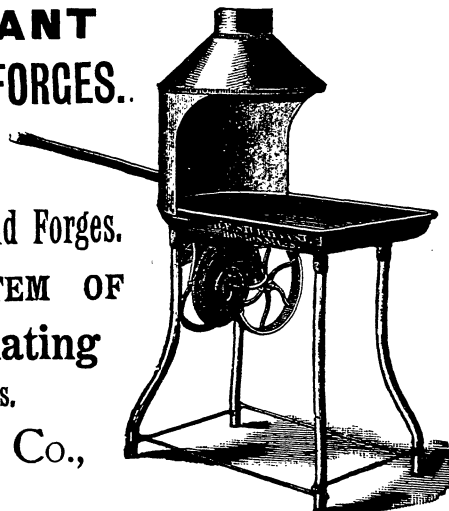
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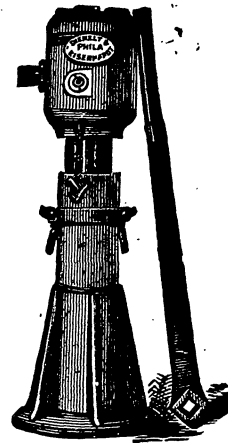
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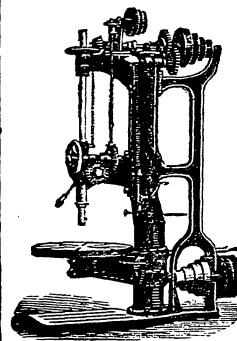
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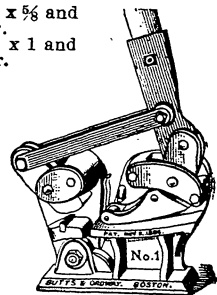
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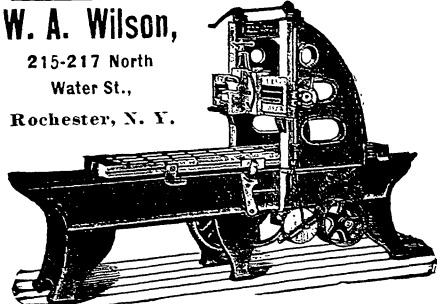
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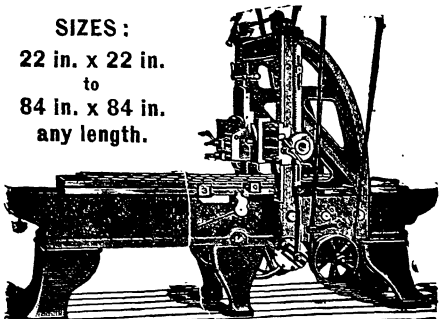


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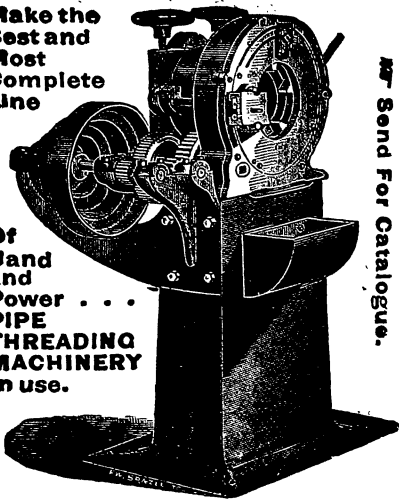


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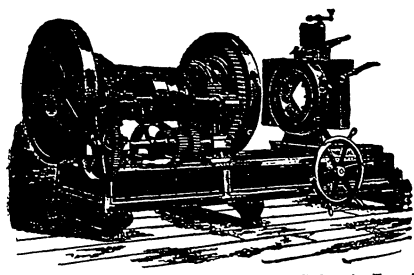
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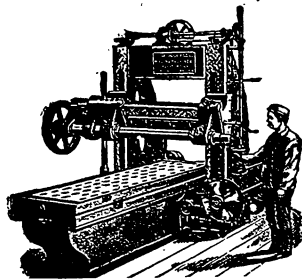


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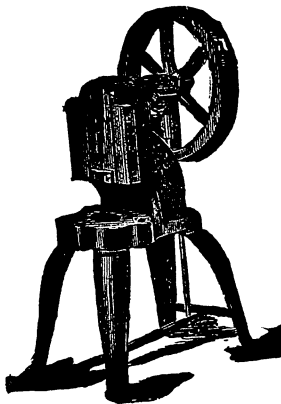


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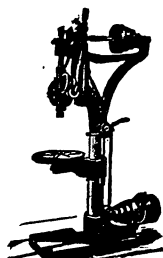
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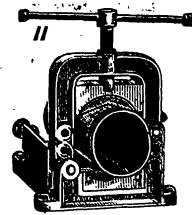
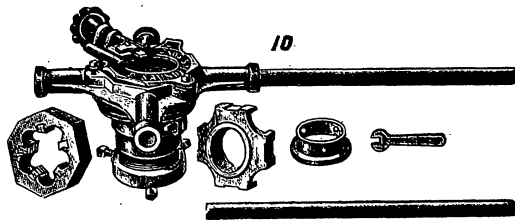


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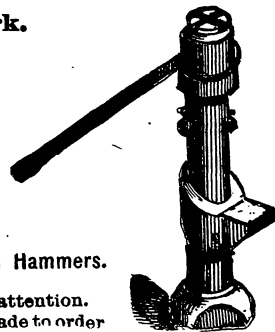
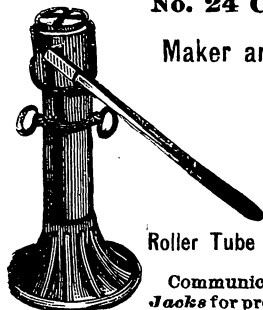
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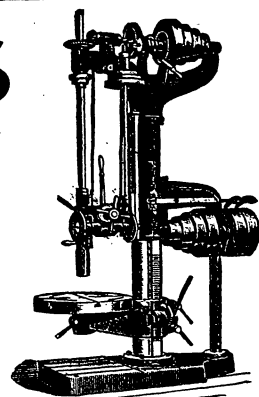
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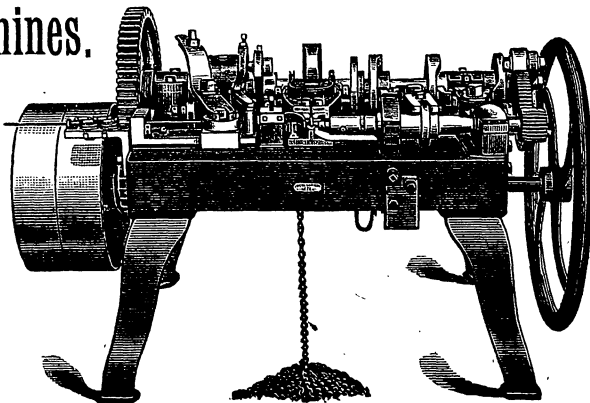
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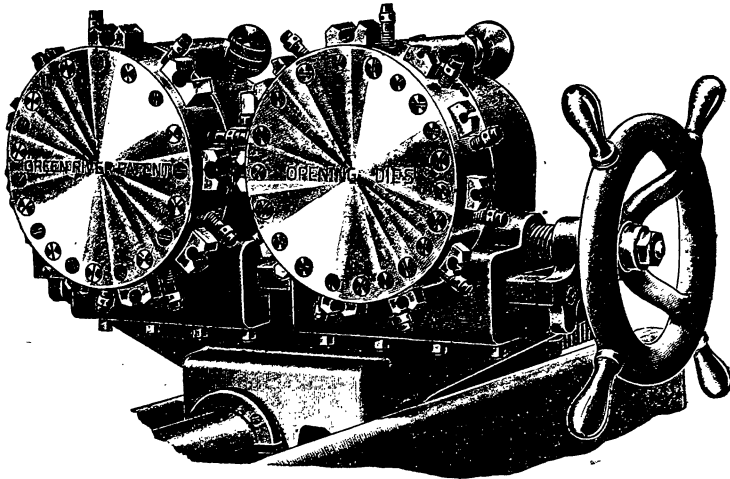
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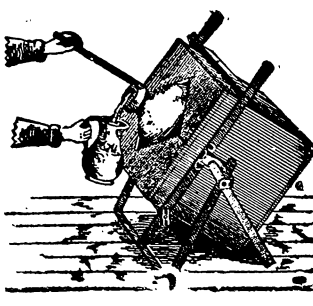
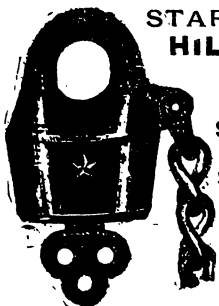
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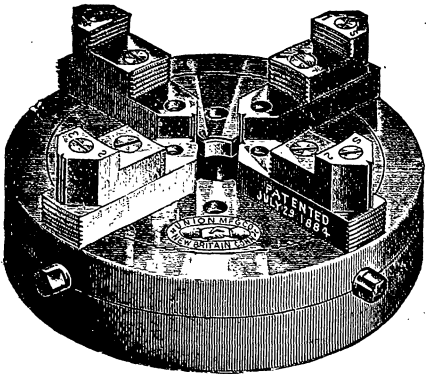
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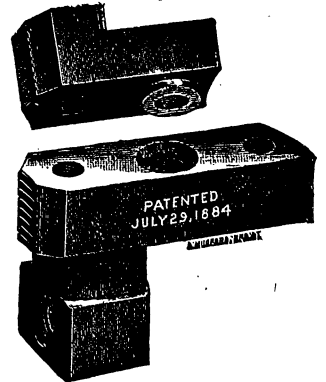
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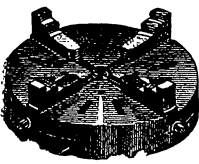
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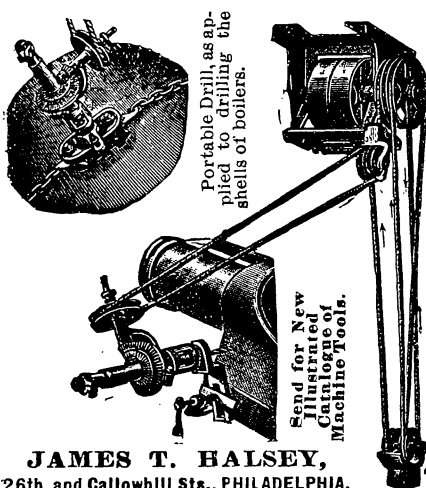
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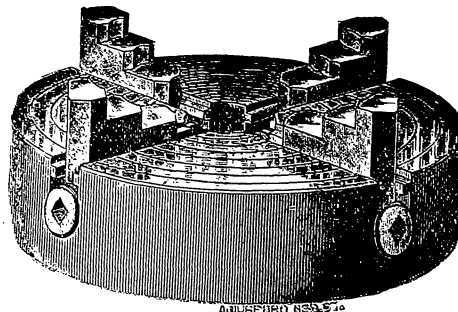
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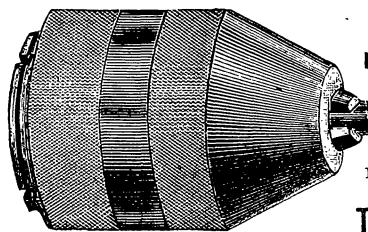


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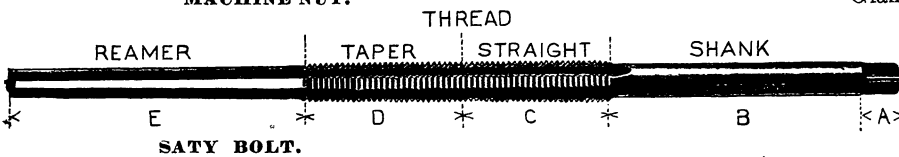
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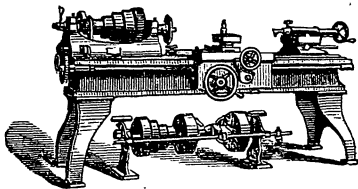
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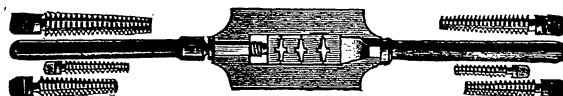
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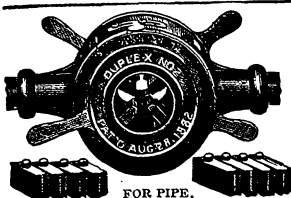
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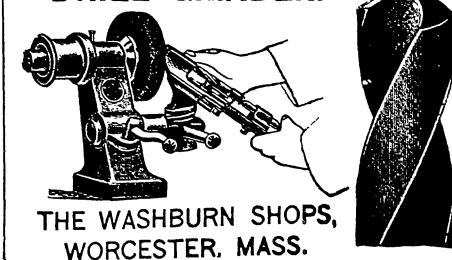
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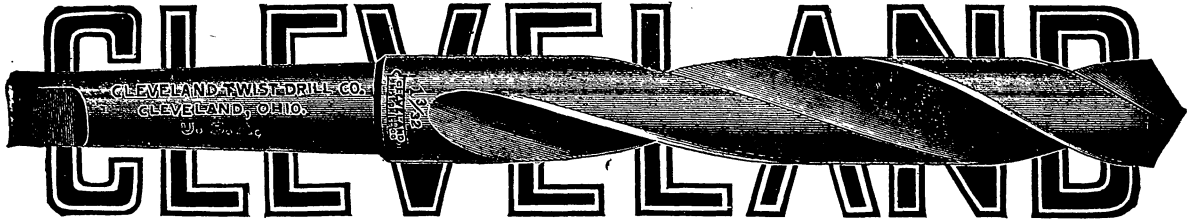
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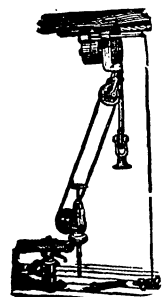
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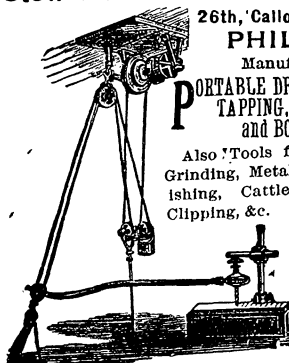
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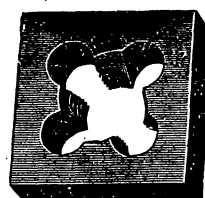
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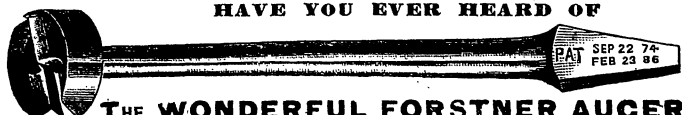
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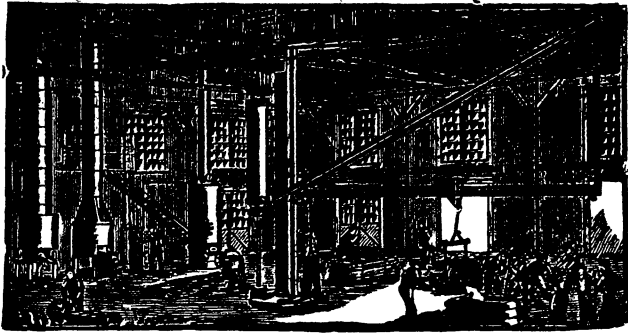
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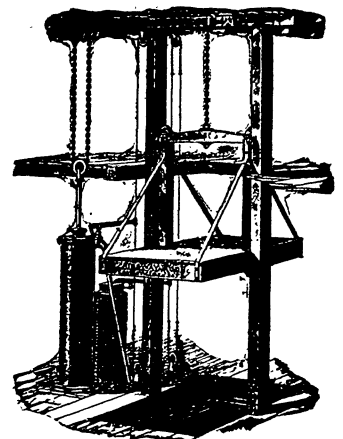


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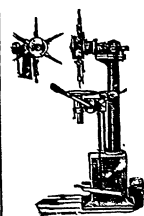
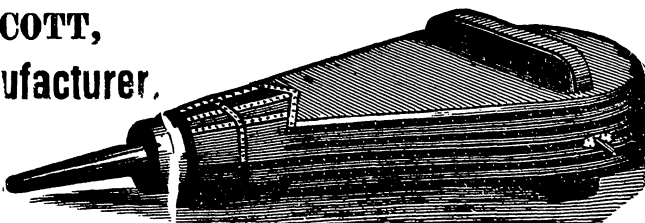
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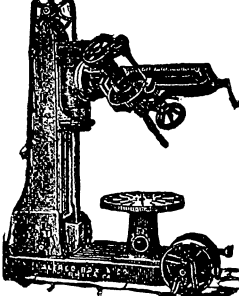
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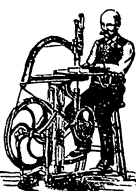
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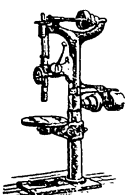
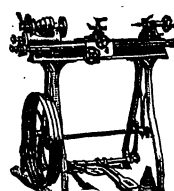
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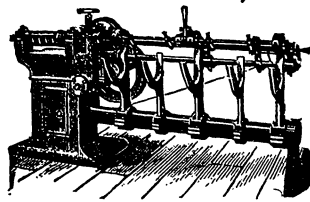
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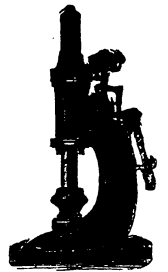
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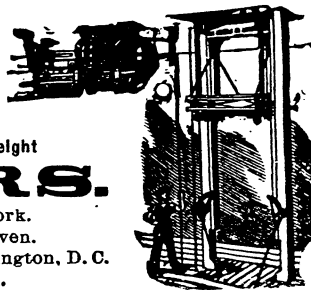
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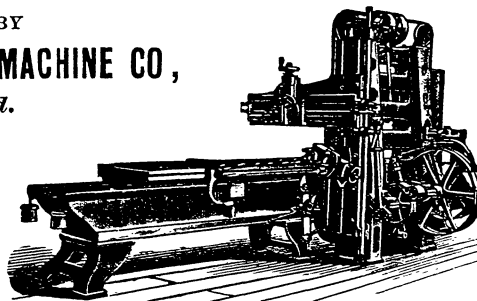
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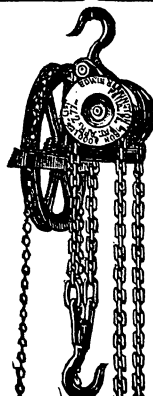
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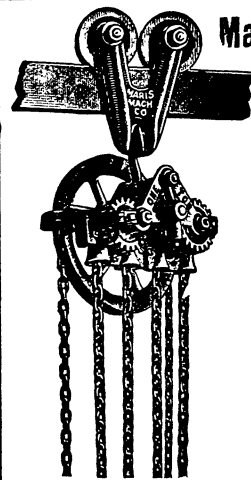
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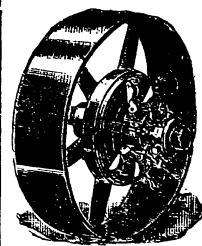
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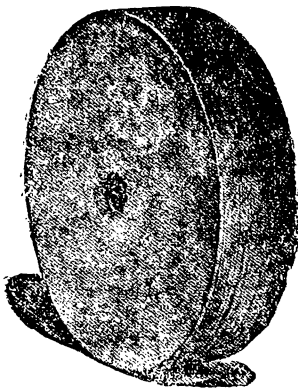
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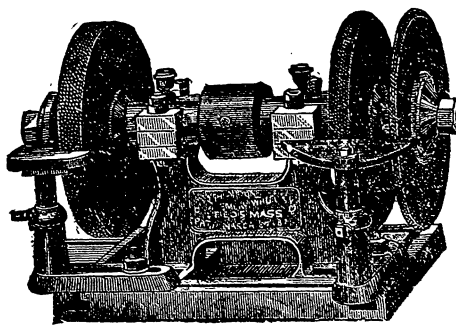
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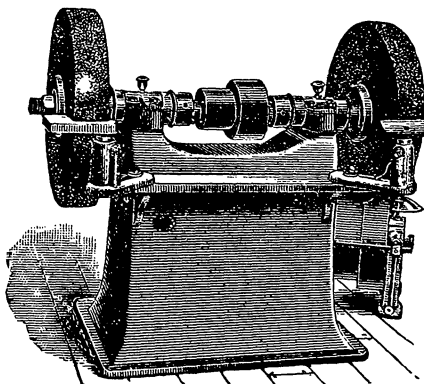
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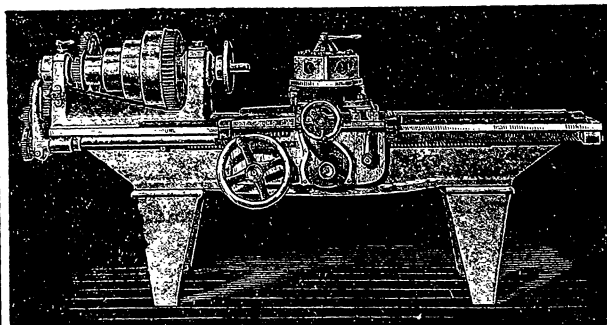
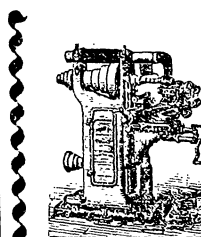
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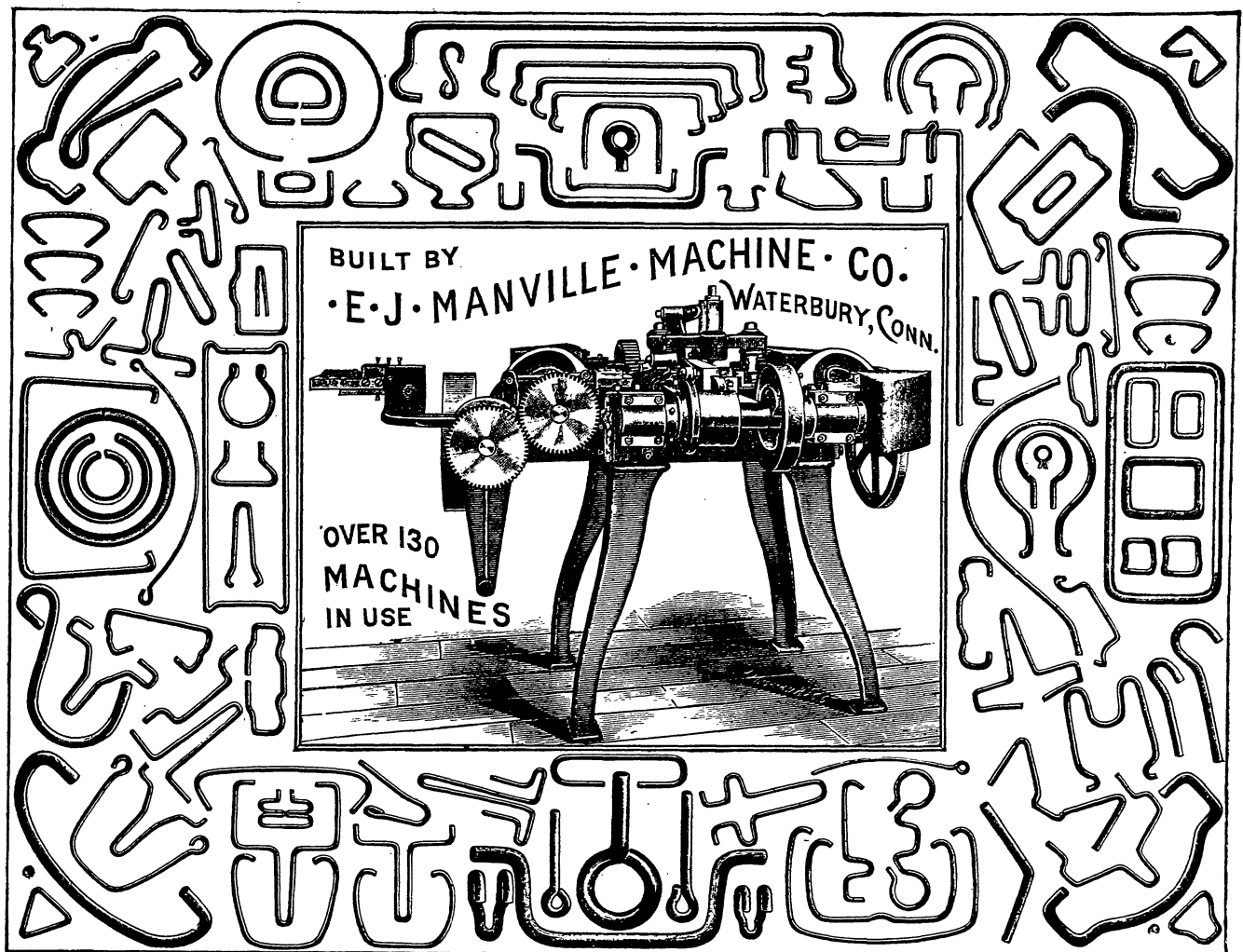
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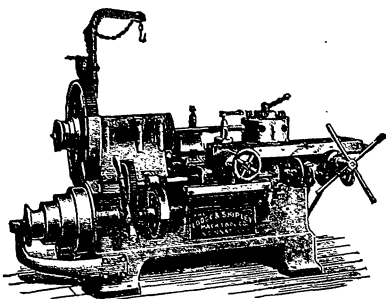
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The Tools will be offered singly and the sale will continue until all are sold.

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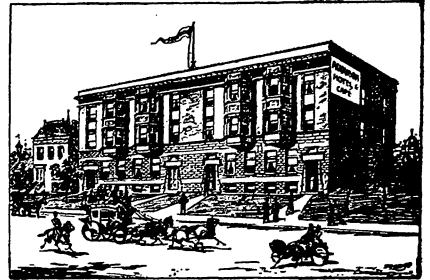
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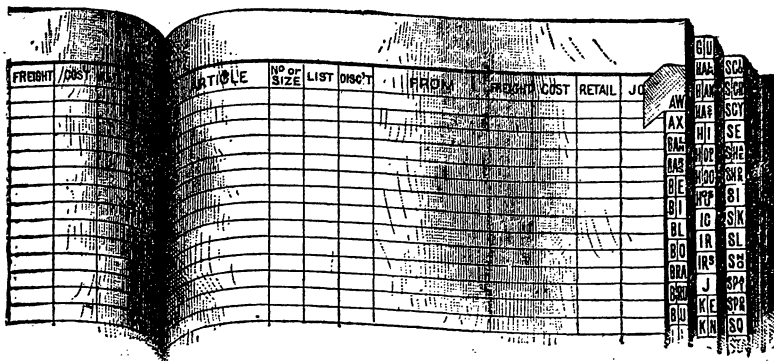
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SECOND EDITION, REVISED AND ENLARGED, WITH MULTIPLE INDEX (Patent Pending).



AD GU SC₀
AN HA_M SCR
AU HAN SCY
AW HA_T SE
AX HI SH_E
BA_N HO_P SH_R
BA_S HOO SI
BE HO_S SK

Fac-Simile of Indexing.

SIZE.—The book is 7 x 10 inches (much larger than Price Books A, B, C, or D), 350 pages.

PAPER.—The paper is the celebrated Crane's heavy ledger paper, tough and strong, permitting frequent changes and erasures.

BINDING.—The binding is of the very best quality—flexible seal grained leather.

INDEX.—By means of the arrangement shown in the cut the index applies to every page (except Supplement) and permits reference to any article at a single motion. This greatly facilitates the use of the book, avoiding the troublesome turning from page to page which is necessary in connection with other Price Books. It has been prepared with great care, and it is believed that it provides a place for every article in the Hardware line.

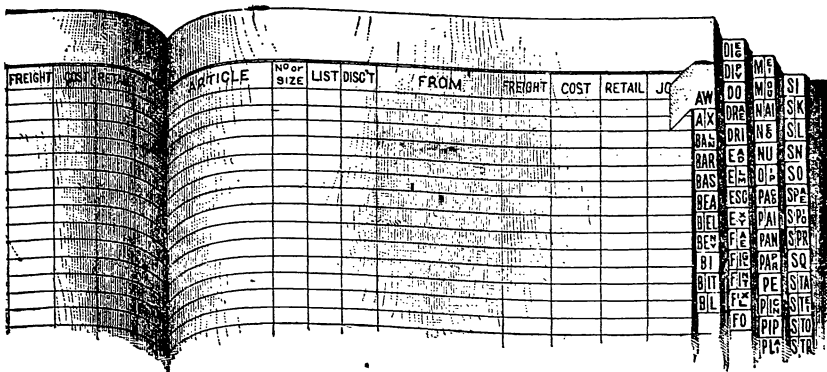
ARRANGEMENT.—The book is arranged to keep a complete record of prices on a single page, the width giving sufficient room.

SUPPLEMENT.—A 40-page Supplement is provided to give room for supplemental quotations, memoranda, tables, &c.

THIS BOOK IS ISSUED IN ONLY ONE EDITION, PRICE, \$5.00.

The Iron Age Hardware Price Book F.

WITH MULTIPLE INDEX (Patent Pending).



AD DI_E ME SI
AN DI_V MO SK
AU DO NAI SL
AW DR_A N_O SN
AX DRI NU SO
BA_N E_D O_P SP_E
BAR E_M PA_C SP_O
BAS ESC PAI SPR

Fac-Simile of Indexing.

SIZE.—The book is 8 1/4 x 11 inches (much larger than Price Books A, B, C, D or E), 556 pages.

PAPER.—The paper is the celebrated Crane's heavy ledger paper, tough and strong, permitting frequent changes and erasures.

BINDING.—The binding is of the very best quality—flexible seal grained leather.

INDEX.—By means of the arrangement shown in the cut the four rows of index applies to every page (except Supplement) and permits reference to any article at a single motion. This greatly facilitates the use of the book, avoiding the troublesome turning from page to page which is necessary in connection with other Price Books. It has been prepared with great care, and it is believed that it provides a place for every article in the Hardware line, and gives ample space for recording prices.

Sufficient space has been provided for large lines of goods such as Axes, Bits, Springs, etc., by allowing four pages to such indices, instead of two pages, as for lines of goods requiring less space. This is accomplished, as in AX for example, in Book F by having a short tab with the letter A on the tab on the first leaf, and AX on the tab on the second leaf. The A on the first leaf is directly over the A on the lower leaf, so that the index reads AX whether looking at both leaves together, or at the lower one only.

The four rows of index tabs are printed in gold letters on black Russia leather. The tabs are securely fastened on both sides of each page, making a handsome and durable index.

ARRANGEMENT.—The book is arranged to keep a complete record of prices on a single page, the width giving sufficient room.

SUPPLEMENT.—An 80-page Supplement is provided to give room for supplemental quotations, memoranda, tables, &c.

THIS BOOK IS ISSUED IN ONLY ONE EDITION, PRICE, \$7.50.

Advantages of Multiple Index Price Book.

A SPECIAL feature of the books is the arrangement of the index characters, which, instead of being alphabetical, are arranged with special reference to the classification of Hardware goods, each index character giving the first two or three letters of the names of Hardware articles as shown above. The ease and convenience with which the books can be used is indicated in the following examples, taken from Book F:

For Augers,	turn to	AU	For Chisels,	turn to	CH _U	For Iron,	turn to	IRO
" Parers, Apple	"	PA _R	" Cutlery,	"	CUT	" Irons,	"	IR'S
" Saws,	"	SAW	" Cartridges,	"	CAR	" Shovels,	"	SH _R
" Pumps,	"	PUN	" Rules,	"	RUP	" Grindstones,	"	GRI
" Bits,	"	BIT	" Locks,	"	LO	" Stones,	"	STO

Special care has been taken to make the classification as indicated in the index correct and comprehensive, making provision for all Hardware articles and giving sufficient space for the keeping and recording of prices. It is thought that every strictly Hardware article has its first two or three letters given, thus permitting immediate reference to it by a single motion.

It is, however, obvious if any articles are not directly designated by the index characters, that the index, being alphabetical in its arrangement, indicates the place where quotations on such articles should be recorded. The supplement, however, may be found useful for quotations on any outside goods which the Hardwareman may desire to keep prices on, while at the same time it may be used if necessary for any overflow of matter from the preceding pages, or to contain list prices or other matter relating to goods.

Hardware Classification.—A pamphlet containing a classification of the leading Hardware articles is furnished with the price books.

Standard Lists.—In connection with these price books a set of *The Iron Age* STANDARD HARDWARE LISTS can be used with great advantage. Price 25 cents.

These price books, which have been prepared by R. R. Williams, Hardware Editor of *The Iron Age*, are presented to the attention of Hardware men in the confidence that they will be found a most valuable aid in keeping track of prices.

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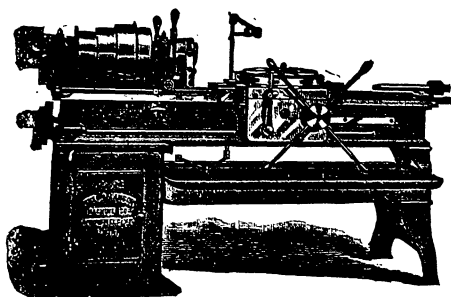
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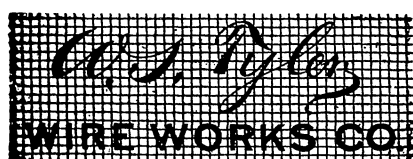
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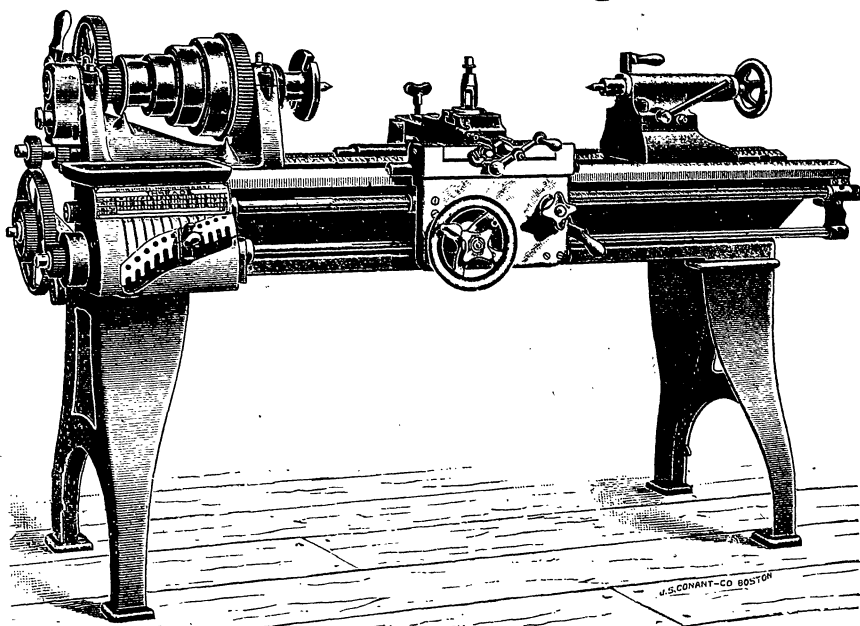
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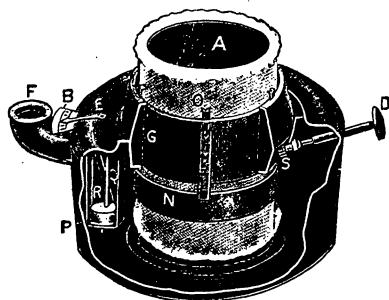
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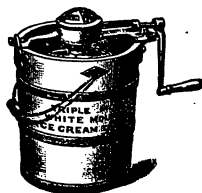
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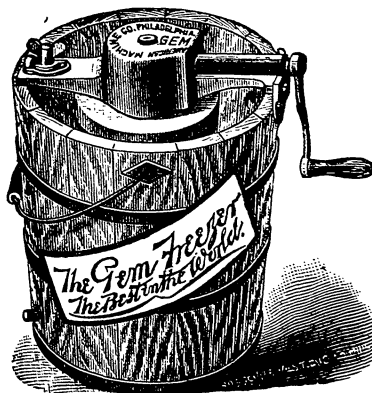
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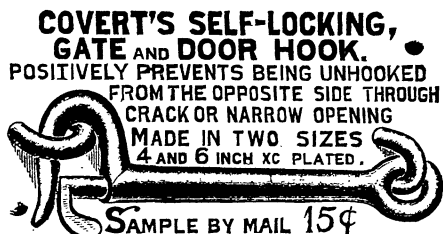


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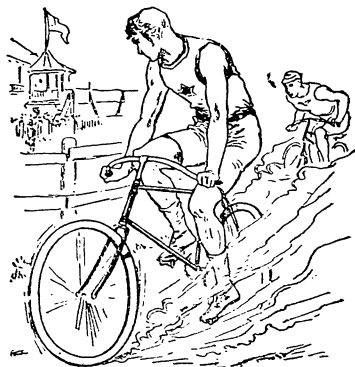
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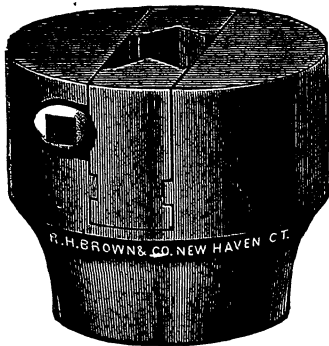
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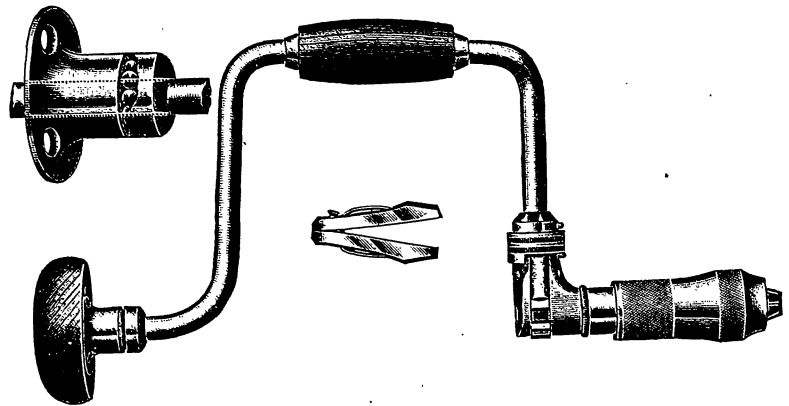
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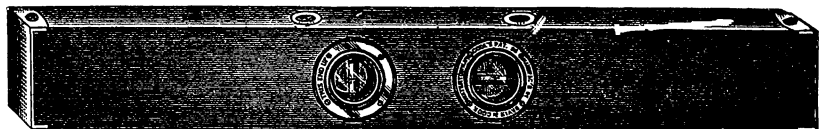
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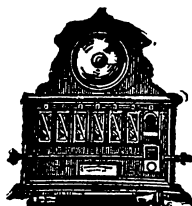


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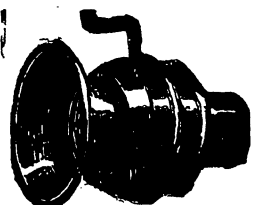
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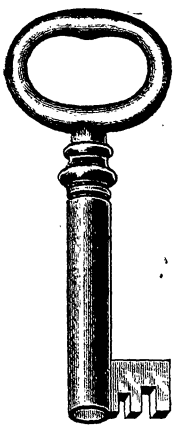
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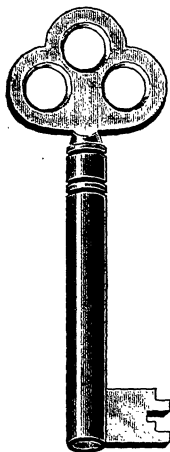
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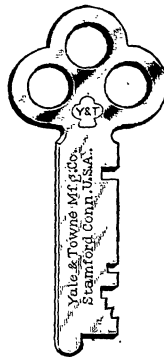
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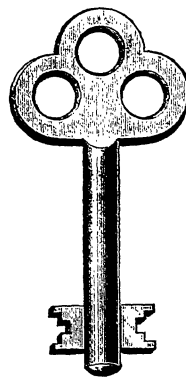
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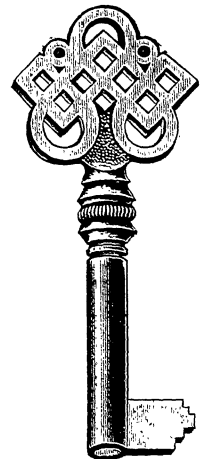
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Fig. 381.

Fig. 145.

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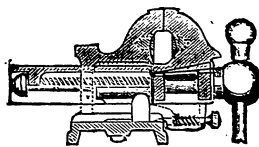
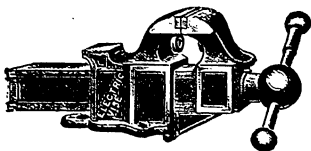
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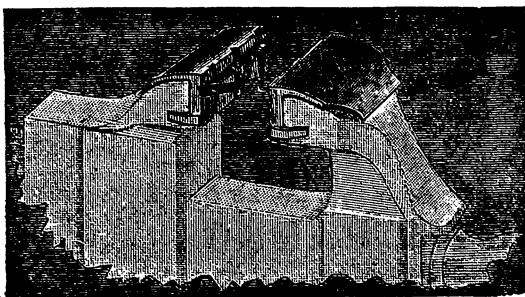
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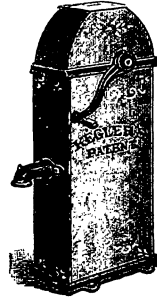
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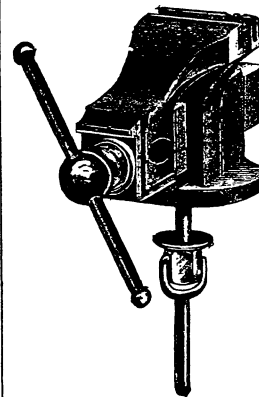
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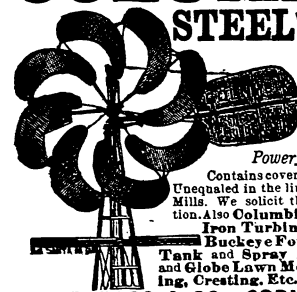


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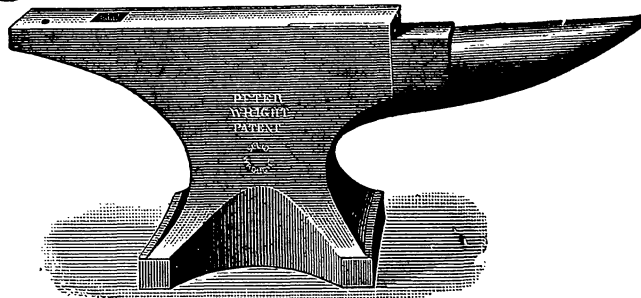
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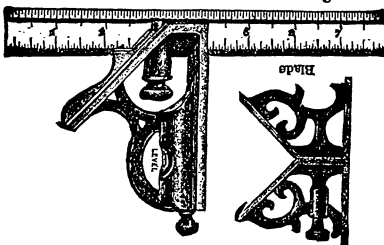
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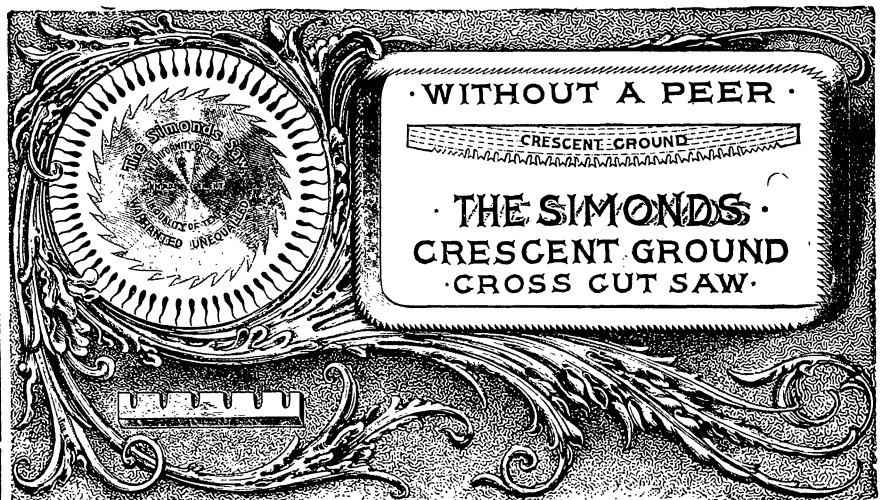
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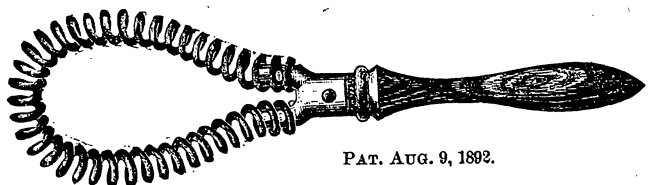
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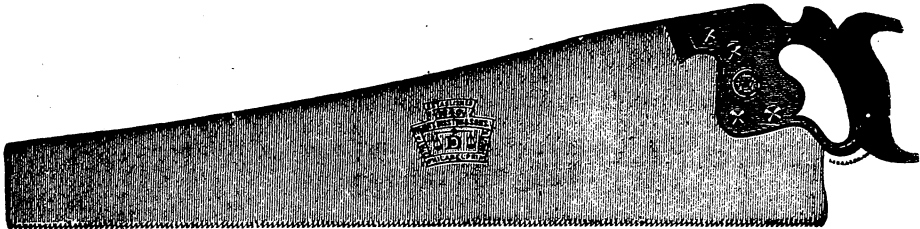
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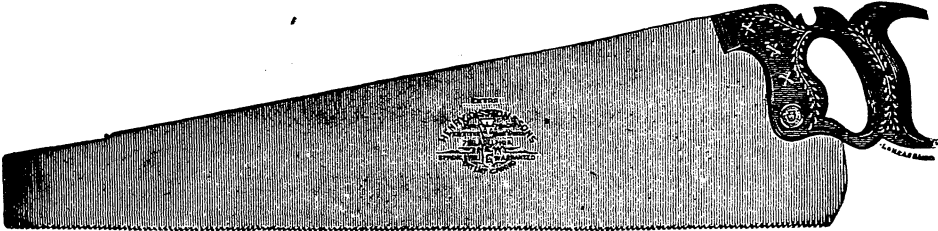
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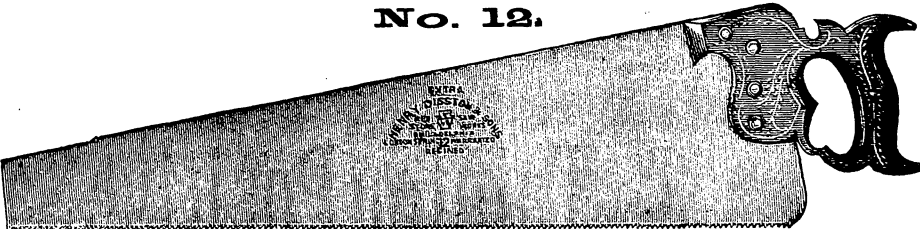
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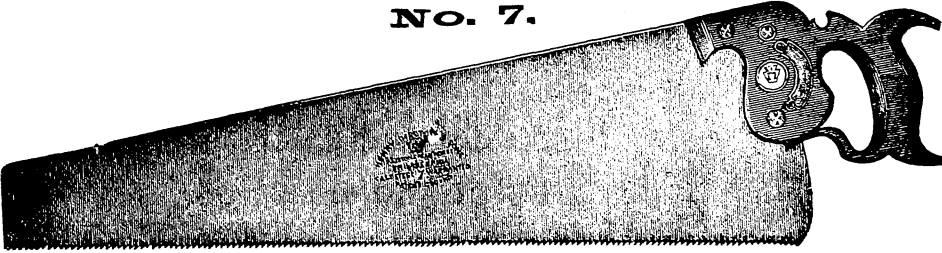
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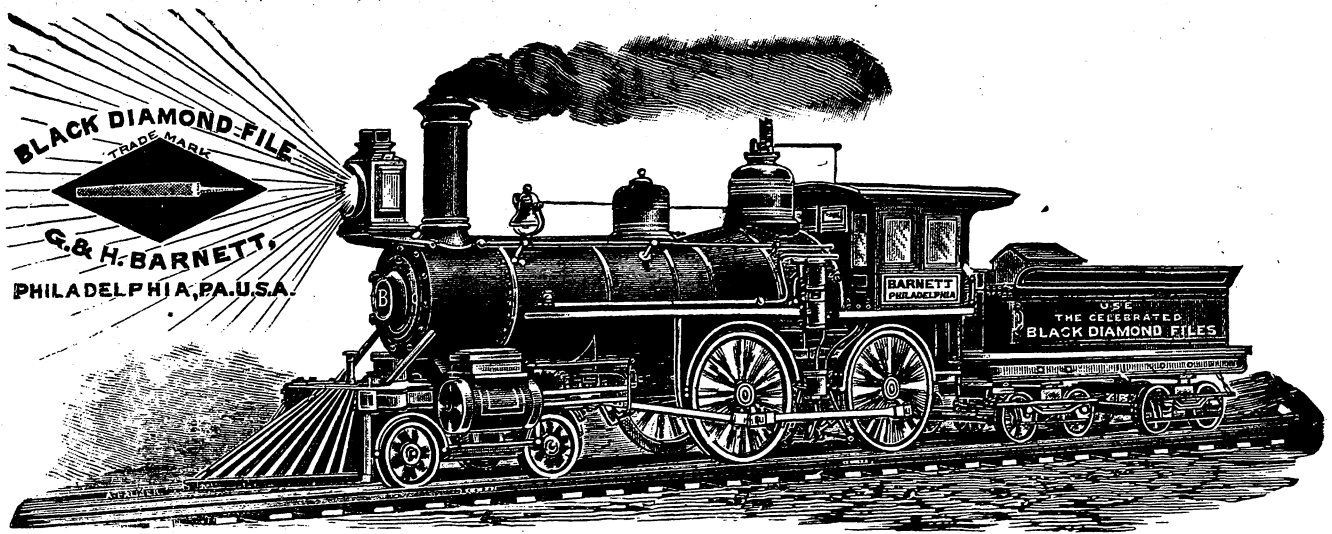
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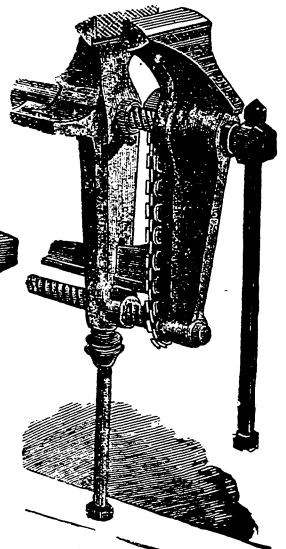
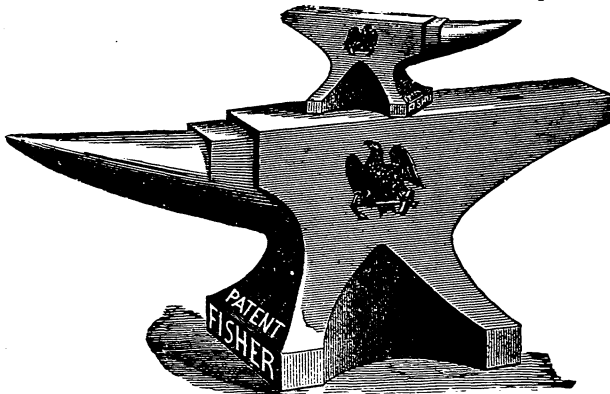
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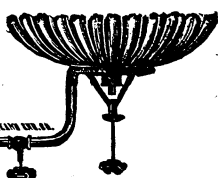
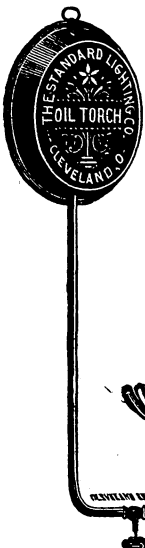
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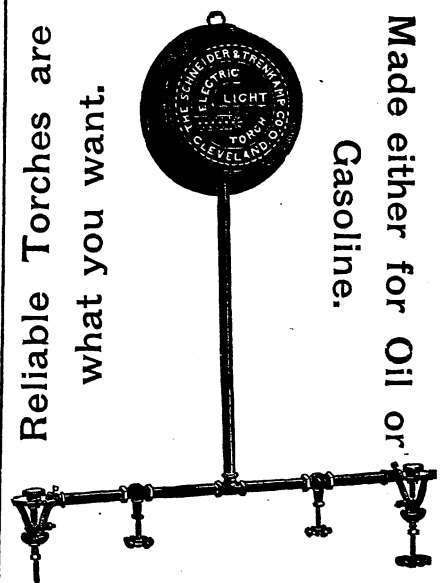
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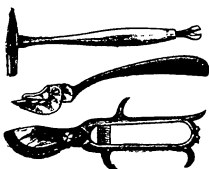
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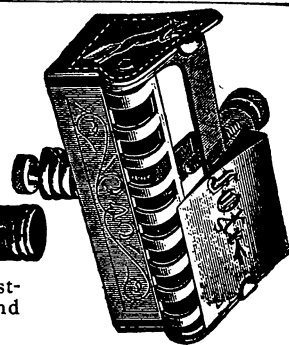
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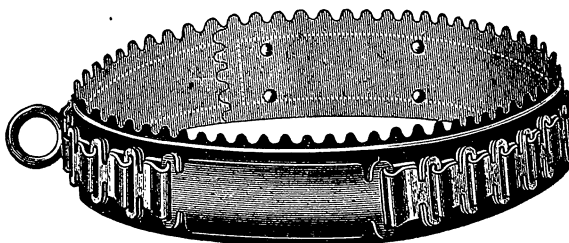
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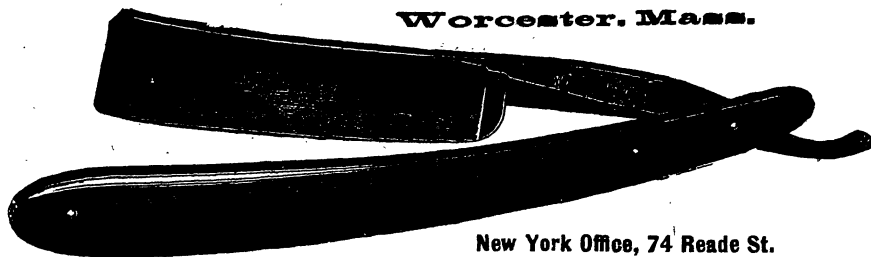
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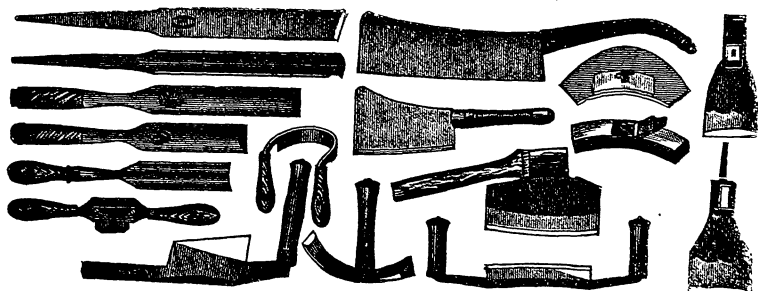
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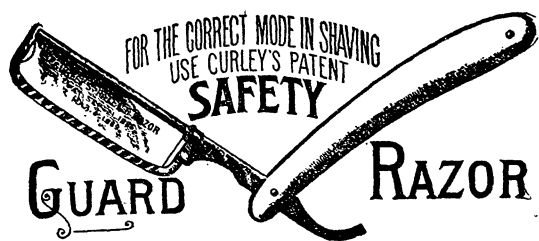
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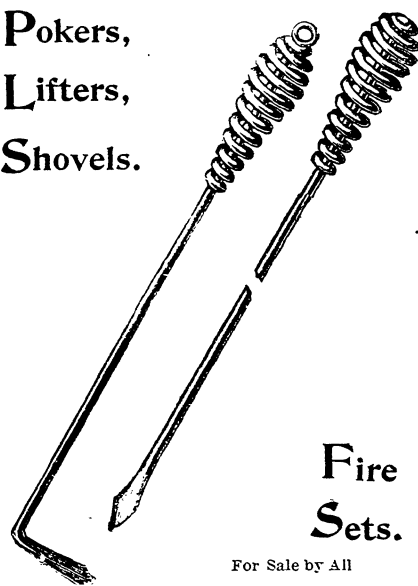
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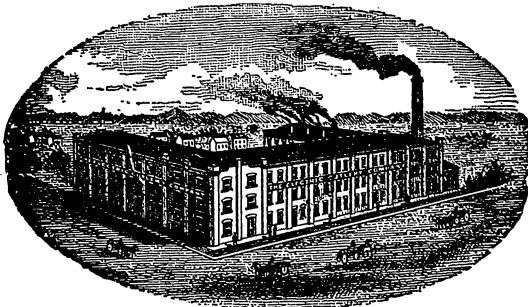
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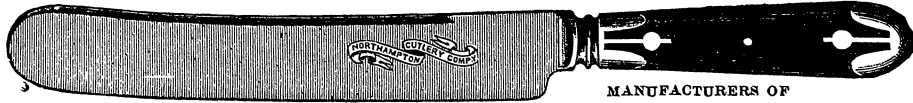
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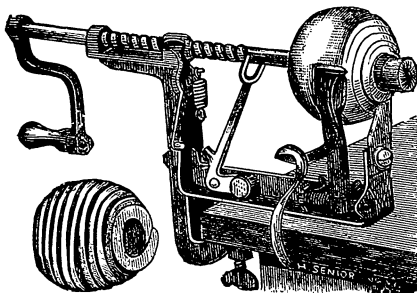
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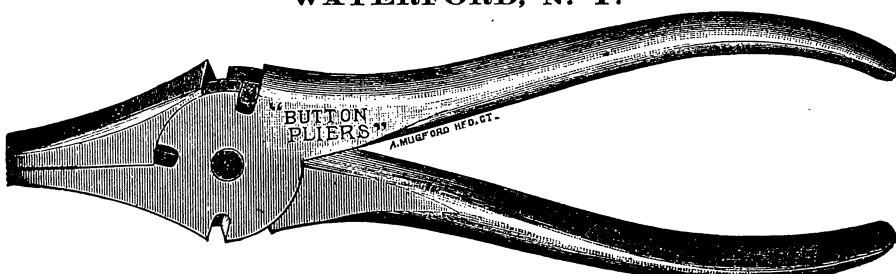
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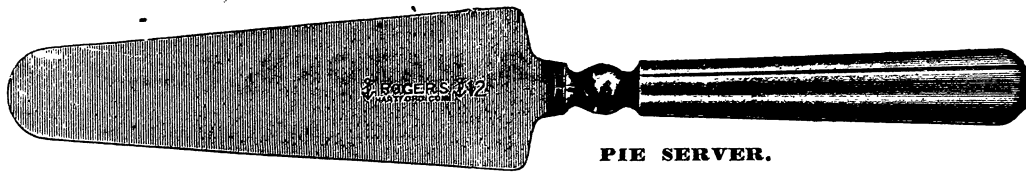
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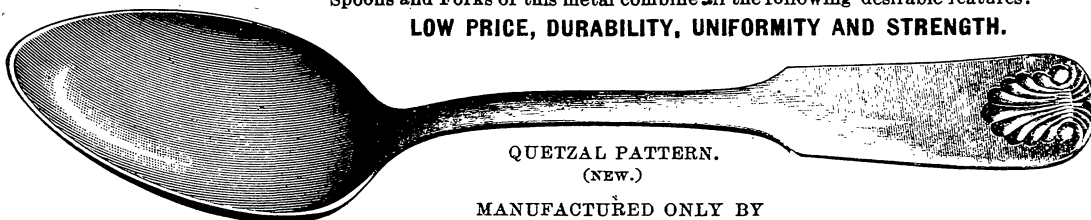
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Chain, made into Halters
Traces, Cow Ties, Tie-

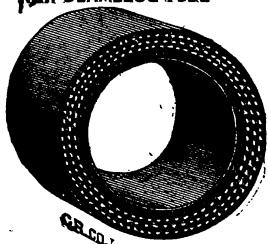
outs, Kennel Chains, &c.; also cut to lengths for manufacturers' use.

The cut represents the exact size of 6/0.

Thirteen Sizes made, 6/0 being the Largest.

FACTORY AT
BRIDGEPORT, CONN.

NEW SEAMLESS TUBE



Who Has Not Had Bad Hose?

Who has not lost time, patience, money, by attempting settlement for such goods?

THE CAUSE in nine cases out of ten is the lapped seam.
THE REMEDY is in buying our

PATENT SEAMLESS-TUBE HOSE,

made by machinery, the tube run like lead pipe, through a die. There is no lapped tube, no seam, no cracks, no defects; water cannot get through to rot the duck and cause the hose to burst.

Made in All Sizes and Kinds of Garden, Engine, Steam, Fire, Brewers' Cotton Hose, &c.

Order a Sample Bale of our Seamless-Tube Hose—Best in the World, costs no more than ordinary lapped-seam hose. The different colors, Red, White, Black, Green and Yellow, make a fine window or sidewalk attraction.

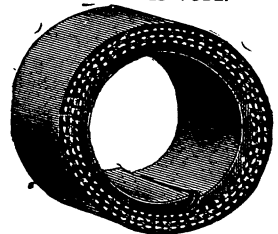
CLEVELAND RUBBER WORKS

of the Mechanical Rubber Co.,

CLEVELAND, O.,

Makers of Mechanical Rubber Goods, Clothing, Druggist's Sundries, Specialties, Etc.

OLD LAPPED TUBE.

SALES OF
Over Two Million Feet

GARDEN HOSE

alone during the past year, distributed throughout the United States, and not a single piece complained of, justifies us in guaranteeing that it will give absolute satisfaction.

We were awarded an order of 25,000ft. for World's Fair of our Celebrated

Seamless-Tube COTTON RUBBER-LINED HOSE.

We Want Your Trade. Send for 60-page Catalogue. Write for Prices and Samples.

FAYETTE R. PLUMB,

Manufacturer of

Edge Tools,
Hammers

AND

Sledges.

Penna. R. R., Tucker and James Sts.



Main Office and Works

Railroad,
Miners'

AND

B. S. Tools.

Philadelphia Pa., U. S. A

CORPORATE MARK,



GRANTED 1780.

JONATHAN CROOKES & SON,

SHEFFIELD, ENGLAND,

Have placed the Agency for the United States for the sale of their celebrated

POCKET KNIVES, RAZORS, Etc.,

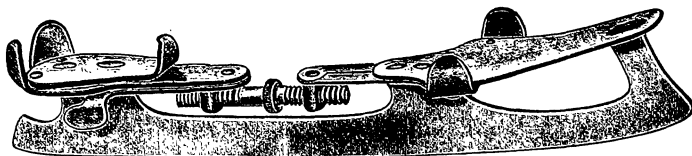
—: WITH :—

DAME, STODDARD & KENDALL, 374 Washington St., Boston, Mass.

Who intend issuing a new list at reduced prices which will embrace many new styles.

— ALSO DIRECT IMPORTERS OF ALL KINDS —

English, German, French and Swedish Cutlery.

The SAMUEL WINSLOW SKATE MFG. CO., Worcester, Mass., U.S.A.


The most extensive Skate Factory in the World.

IF YOU WANT THE BEST
FOR CATALOGUE & PRICES
THEIR MAKE IS EQUAL
IF NOT SUPERIOR
TO ANY OTHER
HAVE BEEN IN BUSINESS SINCE 1840.

BOARDMAN & SON
BRITANNIA SPOONS
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THEIR MAKE IS EQUAL
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HAVE BEEN IN BUSINESS SINCE 1840.

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EAST HADDAM, CONN.

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TO ANY OTHER
HAVE BEEN IN BUSINESS SINCE 1840.

BOARDMAN & SON
SILVER PLATED SPOONS
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Burlington, Vt.,
MANUFACTURERS OF

Improved Adjustable Window Screens.
THE QUEEN ANNE. With box panels; the only screen made and finished alike on both sides.
THE EUREKA. The best cheap extension screen on the market.
SCREEN DOORS. Finished all ready to hang. Sticks, Corners, Improved Frames, &c.
Write for circular and Price-list.

A. S. HENN & CO.,

Manufacturers of
Hardware Specialties, Can Openers, Pocket Wrenches, Mincing Knives, Clothes Line Pulleys, &c.

Send for Catalogue.

NEW HAVEN, CONN.



BICYCLE REPAIR TOOLS

CARRIED IN STOCK. Write for List "A."

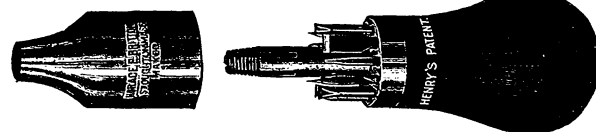
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19 Warren Street, near Broadway, New York.


THE TRADE acknowledges our make of **BUTCHERS' STEELS**
THE BEST IN THE WORLD.

FOR CATALOGUES AND PRICE-LISTS ADDRESS

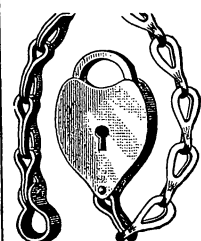
C. & A. HOFFMAN, Manufacturers, FRANKFORD, PHILA., PA.

HORACE E. BRITTON, Stoughton, Mass., Manufacturer of the **HENRY'S PATENT COMBINATION HAFT,**


AND OTHER TOOL SPECIALTIES.

The Combination Haft contains six Brad-Awls, one Chisel, Screw Driver, Diamond Point Awl, Marking Awl, Tack Puller and Reamer. Send for Circular and Prices.

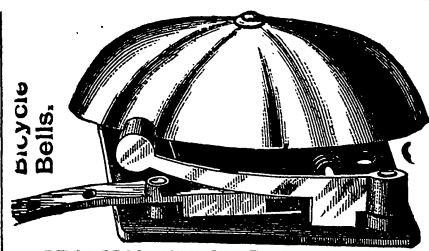
Full Set Sent Post-paid on receipt of \$1.00. (No stamps.)


Bicycle Locks.
Bicycle Bells.

Especially Low Prices

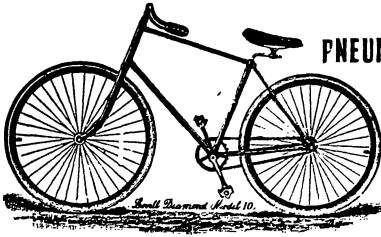
We manufacture hardware specialties of all descriptions to order.

HAINES & ZIMMERMANN, 407 Cherry St., Phila.


BEVIN BROS. MFG. CO., Easthampton, Conn.
Manufacturers of

Sleigh Bells, House Tea, Hand, Gong Bells, &c.

Lovell Diamond Cycles

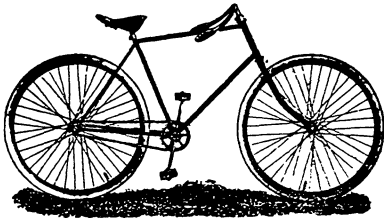


HIGHEST GRADE.
PNEUMATIC, CUSHION AND SOLID TIRES.
FOR LADIES AND GENTLEMEN.

MANUFACTURED BY
John P. Lovell Arms Co.
BOSTON, MASS.
CYCLE CATALOGUE FREE.

WESTERN WHEEL WORKS.

BICYCLE



MANF'TRS

From \$20

to \$135.

MOST COMPLETE LINE MADE.

OFFICE AND FACTORY:

Wells, Schiller and Sigel Sts., and N. Park Ave., Chicago, Ill., U.S.A.

A Wheel



Properly Designed,
Practically Made,
Combining Strength,
Durability and
Perfect Qualifications.
Such are the

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Dauntless

FALCON JUNIOR, for Boys.

FALCON JUNIOR COMBINATION,
for Boys and Girls.

The only high grade juvenile wheels made. Full ball bearings, perfectly dust proof, $1\frac{1}{2}$ in. pneumatic tire, 24 in. wheels, graceful drop handle bars, combination cork and rubber handles.

The bearings are turned out of solid bar steel, and all material and workmanship are first-class. Made in the same manner, of the same stock, with the same care as the large wheels. Good juvenile wheels are scarce, and ours are going rapidly.

The W. Bingham Company, CLEVELAND, OHIO.

DETROIT CORK-SCREW CO.,

DETROIT, MICH., U. S. A.

Manufacturers of

The Davis Cork-Screw,
The Davis Knife and Cork-Screw,
The Puddefoot Cork-Screw,
Columbus and Greely
Cork Extractors.

Manufacturers of

Cut Worm
Spiral Screws and
Cork-Screw Novelties.
Cut Worm Cork-Screws
for the Bar Cork Puller

Send for Price-List and Discounts.



FIG. 3. Showing Davis cork-screw and fulcrum in position to pull cork.

Yacht and Boat Hardware.

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Send for 212-Page Catalogue.



DO YOU AIM

To Make a Bull's Eye

In Your Business or at the Range?

If you deal in ARMS or AMMUNITION or shoot a Rifle, Pistol or Shot Gun, you will make a HIT by sending for the IDEAL HAND BOOK.

IDEAL MFG. CO., New Haven, Ct., U. S. A.

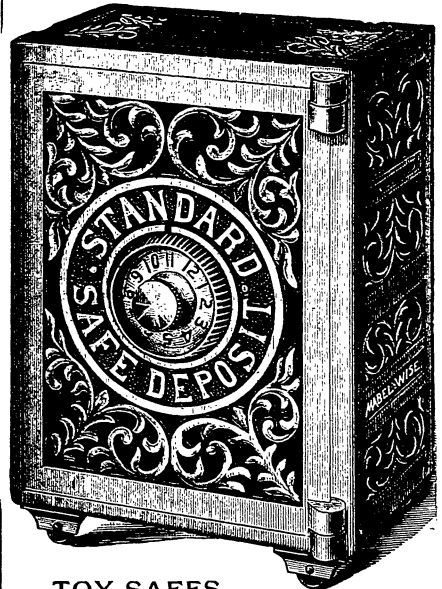
Please mention *The Iron Age* when you write.

The HENRY C. HART MFG. CO.,

DETROIT, MICH.

MANUFACTURERS OF

Hardware Specialties.



TOY SAFES.

Break it Down!!!

—IF YOU CAN.—



BRADLEY
STEEL
SHELF
BRACKETS

ARE { STRONG,
LIGHT,
ARTISTIC,
PROFITABLE.

THEY ARE GREAT SELLERS.

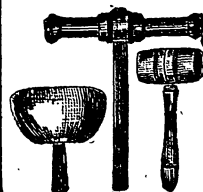
"I have NEVER HAD A CALL for this bracket," a certain dealer once said to us.

His competitor was taking good care that he should not.

You want "TO BE IN IT" this fall. Let us send you our catalogue and prices.

PAT. NOV. 8,
1892.

ATLAS MFG. CO., New Haven, Conn.
SOLE MANUFACTURERS.

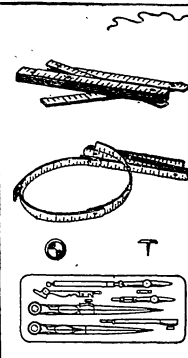


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WORKS.

MANUFACTURERS OF

MALLETS.
Also Cotton and Bale
Hooks.

Patented Feb. 13, 1877, a new
combination of Hooks.
456 E. HOUSTON ST.,
New York City.



KEUFFEL & ESSER CO.

NEW YORK.
BRANCH: CHICAGO.
FACTORIES: HOBOKEN, N.J.

MANUFACTURERS OF EXCELSIOR MEASURING TAPES.
SUPERIOR QUALITY, LATEST IMPROVED. GREATEST VARIETY.

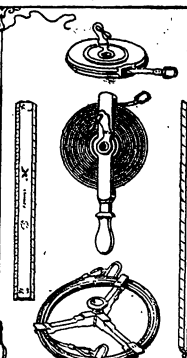
STEEL • METALLIC • LINEN • POCKET TAPES.
EXCELSIOR BAND CHAINS FOR SURVEYORS, LAND CHAINS, &c.

K & E CO FOLDING POCKET RULES.

NO WARPING, NO SHRINKING, NO ILLEGIBLE JOINTS, NO BULK.
2 3.4 5.6 8 FOOT, ALSO WITH PATENT SPRINGS.

FLAT & TRIANGULAR BOXWOOD SCALES, BEST MADE.
PLUMB BOBS, THUMB TACKS, DRAWING INSTRUMENTS.

PRICE LISTS & QUOTATIONS PROMPTLY SENT.





Skilled Mechanics

want tools that are warranted accurate, best in workmanship, latest in design, finest in finish.

Live Dealers

want tools they can swear by, not at. That can be relied upon to satisfy intelligent customers. That come nicely put up. That pay a good profit.

Starrett's Tools

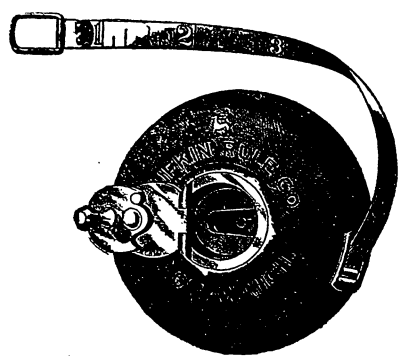
meet the requirements of both.
SEND FOR CATALOGUE.
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Athol, Mass., U. S. A.
LONDON AGTS: Chas. Churchill & Co. Ltd.,
21 Cross St., Finsbury, E. C.

CARPENTERS' & MACHINISTS'
IRON BENCH LEVEL
WITH DOUBLE PLUMB.
No. 5. 6 in.



MANUFACTURED BY

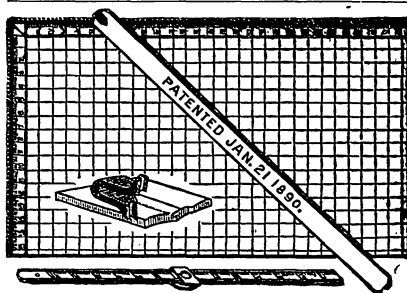
C. F. RICHARDSON & SON,
ATHOL, MASS.



"RELIABLE" Steel Measuring Tapes.

Entirely new. Handle or crank when closed is perfectly flush with leather case. Opens by pressing button on opposite side and folds out double, giving increased leverage. Best and most convenient steel tape on the market. Fully guaranteed. Will send samples on approval. We carry a complete stock of our goods at our New York Office, 20 Murray St.

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The Canton Glass Board.

Cuts any Fraction of an inch by Eighths.

Unequaled for accuracy and quick work in cutting square or at any angle. Saves breakages, &c.

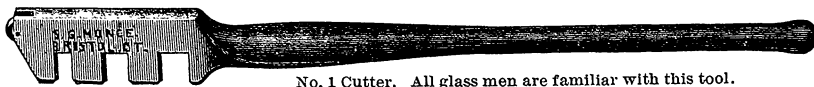
—ALSO—

IMPROVED TRAMMEL RULE for Cutting Circles
From 8 inches up to 48 inches, Segments, Gothic Shapes, &c.

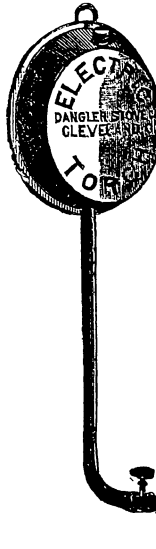
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MONCE'S NOVELTY GLASS CUTTERS. — INTERCHANGEABLE LOCK STENCILS.



No. 1 Cutter. All glass men are familiar with this tool.
S. G. MONCE, - - BRISTOL, CONN.



Dangler Electric Torches

FOR
GASOLINE
OR
OIL.

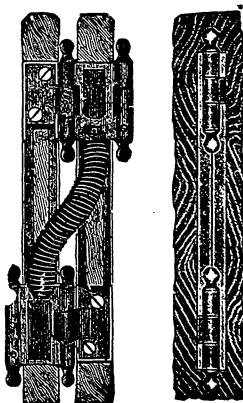
14 JETS OF LIGHT,
3 to 6
INCHES
LONG.

FOR lighting manufacturing establishments, such as Rolling Mills, Foundries, Machine Shops, Engine Rooms, &c., &c., with a convenient, portable, brilliant, steady light, and by cheaper means than by Coal Gas

SOLE MANUFACTURERS,

The Dangler Stove & Mfg. Co.,
Cleveland, Ohio.

Chicago Spring Butts.

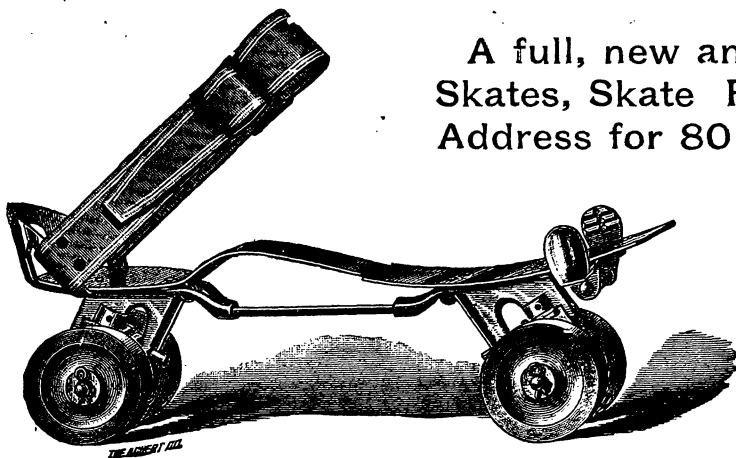


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Chicago Spring Butt Co.,
Chicago, Ill.

DOORS.	1	21	31	41	51
	Jap'd Pair.	Nickel Plated Pair.	Bronze Plated Pair.	Real Bronze Pair.	Polished Brass Pair.
3/4 to 1 in.	\$1.20	\$3.00	\$3.00	\$7.25	\$7.25
1 1/4 to 1 3/4 in.	1.50	3.75	3.75	8.00	8.00
1 3/4 to 1 7/8 in.	2.50	5.50	5.50	10.75	10.75
1 7/8 to 2 in.	4.00	7.50	7.50	18.00	18.00
2 to 2 1/4 in.	7.00	10.00	10.00	27.00	27.00
2 1/4 to 2 3/4 in.	10.00	14.00	14.00	36.00	36.00

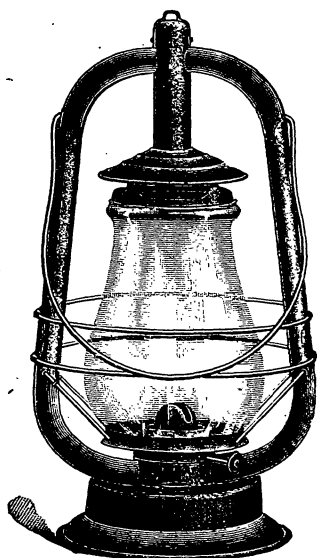
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and Prices.

HENLEY'S CELEBRATED RINK AND CLUB ROLLER SKATES.



A full, new and complete stock of Roller Skates, Skate Repairs and Rink Supplies. Address for 80 page catalogue and prices,

M. C. Henlev,
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SURPRISE TUBULAR.

A "SURPRISE" TUBULAR

should be in every well regulated family, city or country. Made only by the

Ohio Lantern Co.,
TIFFIN, OHIO,

who make a full line of all kinds of Lanterns.

W. W. PRYOR & CO., - Eastern Agents.

A full line of samples can be seen and the trade supplied at factory prices.



This GUN has rebounding locks and the barrels can be taken off and put on again without cocking the arm, and when cocked the hammers may be let down gradually, and without the full force of the blow. It is simple in construction, having very many less pieces than any other hammerless gun.

Easily Tipped and Cocked,
Damascus Barrels,
Handsomely Engraved,
French Walnut Stock.

SEND FOR DESCRIPTIVE
CATALOGUE.

New Hammerless Double Gun,

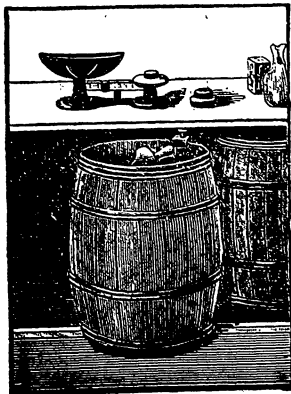
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FOREHAND ARMS CO.

Worcester, Mass.



PRICE VERY LOW.



**Wonder Somebody Didn't
THINK OF IT BEFORE!**

The Perfection Barrel Swing.

A simple device, readily attached to any Pantry, Cupboard, Broad Shelf or under the counter in a Grocery or Hardware Store, for swinging a barrel to get at the contents easily. Price, \$1. All Hardware dealers will supply them.

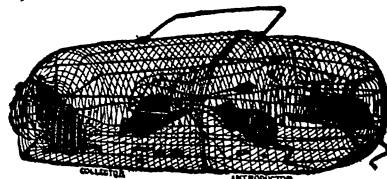
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THE LEAVITT MACHINE CO.

ORANGE, MASS.

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GENUINE **MARTY** RAT AND MOUSE TRAPS
ALWAYS IN STOCK.



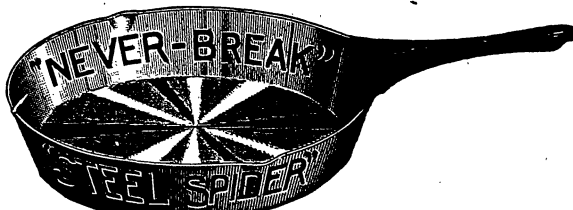
THEY DO THE WORK.
Orders solicited. Prices on application.
BURDITT & WILLIAMS,
20 Dock Square, Boston, Mass.
— SOLE AGENTS AND IMPORTERS. —

"PURITAN"COOKERS, COFFEE POTS AND
OTHER SPECIALTIES.Cooks Quicker than any other
Porcelain Rice Boiler made.**"NEVER-BREAK"**

Wrought Steel Spiders

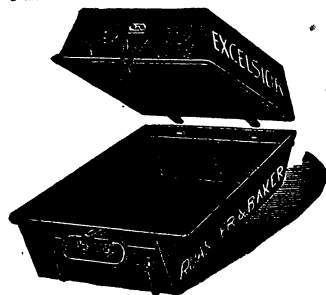
Wrought Steel Griddles, Kettles, Stew Pans, Stew Pots, Maslins,
Scotch Bowls, Hotel Sauce Pans, &c.

MIRROR POLISHED—TINNED—PORCELAINED.

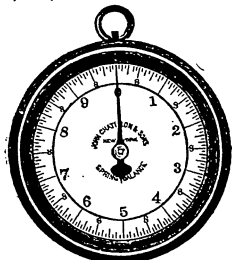


"MIRROR POLISH," the only Perfect Plain Steel Finish

SOLE MANUFACTURERS

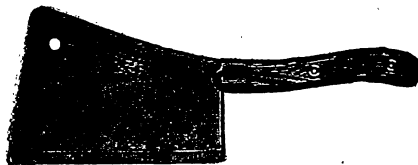
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CLEVELAND AND NEW YORK.**"EXCELSIOR"**Roasting and Baking Pan.
PLANISHED and PLAIN STEEL.**John Chatillon
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85, 87, 89, 91, 93 CLIFF ST., NEW YORK.

ESTABLISHED
1885SEND FOR
PRICE LIST.MANUFACTURERS
OF
SCALES
—AND—
BUTCHER TOOLS.

Sole Agents for

Foster Bro.'s Butchers' Cutlery.



John Chatillon & Sons, N. Y.



Light your Streets and Driveways.

The S. G. & L. Co.**Tubular Globe Street Lamp**is the best Street Lamp manufactured. Equal
to the best gas light Will not blow out in
the strongest wind. Will not smoke. Will
not freeze. Automatic Extinguisher. Out-
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for one cent.

No. 3

Globe Street Lamp.

MANUFACTURED BY

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Western Branch, 25 Lake St., Chicago, Ill

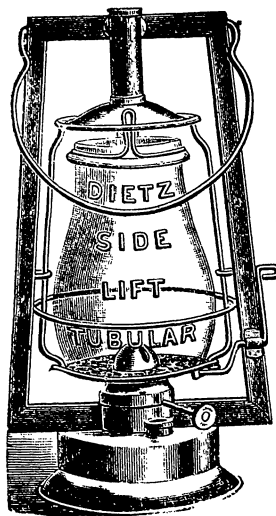
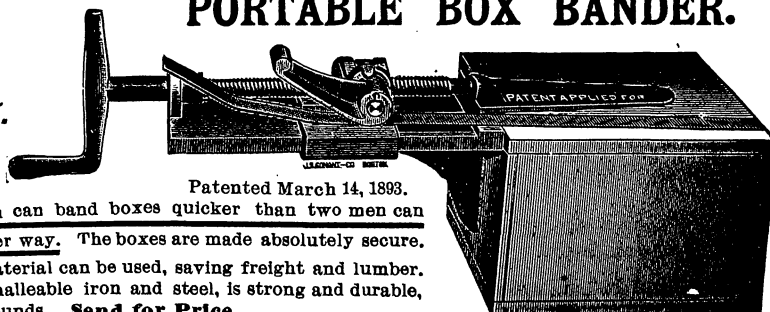
ESTABLISHED 1840.

A WORD TO THE WISE.When you purchase a Lantern, Street
Lamp or Driving Lamp, remember the**"DIETZ" Make**is the best. Our goods have stood the test of time
and are safe and reliable. The name "DIETZ" is
plainly stamped on them. Our specialty is **Tubular
Lanterns, Street Lamps and Driving Lamps.**
We make a large variety, being the oldest and largest
house in our line.

ASK FOR THEM!

R. E. DIETZ COMPANY,

New York, 60 Lighthouse St. U. S. A. Chicago, 25 Lake St.

SOON
PAYS
FOR
ITSELF.**PORTABLE BOX BANDER.**

Patented March 14, 1893.

One man can band boxes quicker than two men can
in any other way. The boxes are made absolutely secure.
Lighter material can be used, saving freight and lumber.
Made of malleable iron and steel, is strong and durable,
weighs 8 pounds Send for Price.

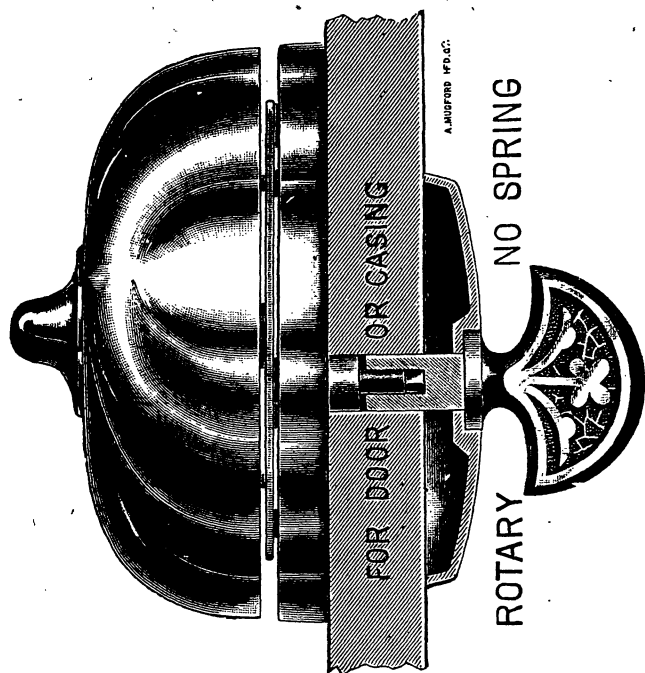
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BURLINGTON, VT

NEW DEPARTURE "ROTARY" DOOR BELLS.

ELECTRICAL RESULTS.

(PATENTED JULY 14, 1891; MARCH 29, 1892.)



Simply turning the knob about ONE-FOURTH IN EITHER DIRECTION produces about TEN CLEAR, FULL tones, which, though not startling or annoying, can be better heard all through the house than any bell ever made to imitate Electrical Results.

3 INCH.

No. 91, - - - - - Nickel Plated.
No. 92, - - - - - Bronze Plated.
PER DOZEN, \$20.00

3 1-2 INCH.

No. 101, - - - - - Nickel Plated.
No. 102, - - - - - Bronze Plated.
PER DOZEN, \$24.00.

No. 101 and 102.

LIBERAL DISCOUNT TO THE TRADE.

JOHN H. GRAHAM & CO., 113 CHAMBERS ST., NEW YORK CITY.

GENERAL AGENTS.

A Triumph in Small Bore Rifles.

STEVENS' "FAVORITE" RIFLE.



80 SHOTS AT 40 FEET. 10 SHOTS AT 40 FEET. 10 SHOTS AT 40 FEET.

25 STEVENS 22 SHORT 25 LONG RIFLE

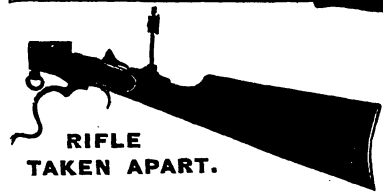
ABOVE TARGETS ARE ACTUAL SIZE.

Made for the 22 or 25 Rim Fire Cartridge.

WEIGHT, 4½ POUNDS.

22-INCH BARREL.
LEVER ACTION LIKE SHARPS.
TAKEN APART IN TEN SECONDS.

IT IS SIMPLY IMPOSSIBLE
TO MAKE MORE
ACCURATE SHOOTING BARRELS
THAN ARE ON THIS RIFLE.



RIFLE
TAKEN APART.

No. 17. Plain Open Sights.....\$12.50
No. 18. Vernier, Open Back, and Beach Front Sights..... 17.00
No. 19. Lyman Peep, Open Back, and Lyman Front Sights, 17.00

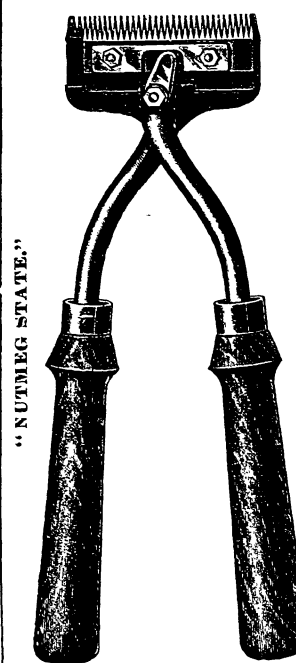
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J. Stevens Arms & Tool Co.,

P. O. Box 5729.

Chicopee Falls, Mass U. S. A.

Edward S. Hotchkiss,

MANUFACTURER OF HARDWARE,
BRIDGEPORT, CONN.

"NUTMEG STATE."
SATISFACTORY PRICES. Standard goods. Don't fail to write when in want of Horse and Barber's Clippers, No. 20 Steel Rat Killers, Curry Combs, Metal and Wood Choker Mouse Traps Lemon Squeezers, Baxter Pattern Wrenches, &c., &c.

AMERICAN TOOL COMPANY,
NEW YORK,
MANUFACTURERS OF

TOOL CHESTS

Of all sizes, complete with tools, for Hardware, Toy, Notion and Variety trades.
Factory and Salesroom,

200 West Houston Street, near Varick.
Also Machinists' Tool Chests, empty. Illustrated Catalogue and prices furnished on application.

ENTERPRISE LAWN SPRINKLER.

No. 1, \$3.50; No. 2, \$2.75.

Indispensable
to a well kept
Lawn.

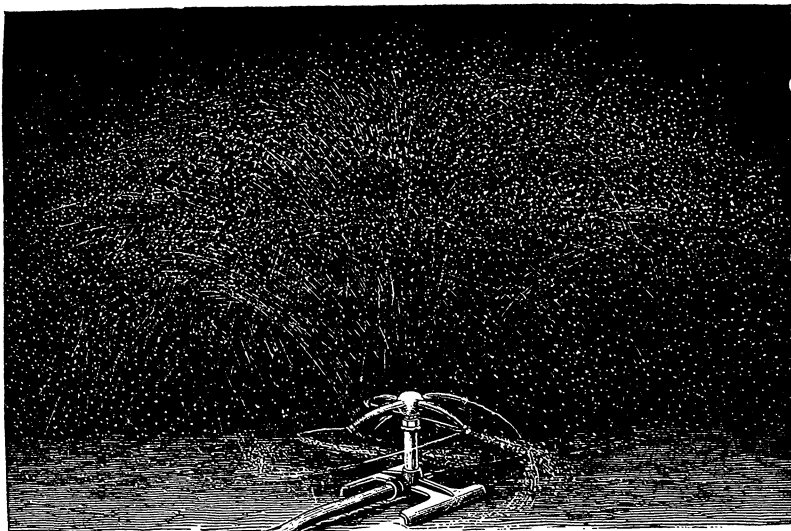
A Sprinkler
which will work
satisfactorily in
spite of muddy
water.

May be easily
moved from
place to place
without going
near it

SOLD BY ALL
HARDWARE DEALERS.

SEND FOR CATALOGUE.

THE ENTERPRISE MFG. CO., of PA., 3d and Dauphin Sts., Philadelphia. Branch Office, with J. C. McCarty & Co., 97 Chambers Street, N. Y.



ADVANTAGES:

1st. Each machine is furnished with a cord or rope, so that the Sprinkler may be easily moved, when running, without going near it.

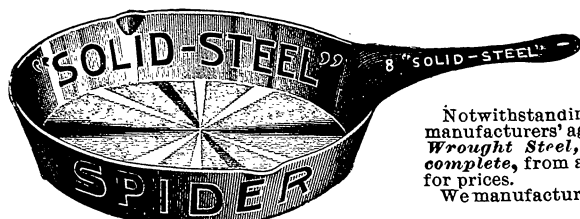
2d. The water passes through a strainer before it enters the small perforations, which are thereby prevented from filling up.

3d. It is so constructed that the weight of its revolving parts is removed by the pressure of the water, thus overcoming unnecessary wear.

4th. All parts of the machine are made sufficiently strong for ordinarily rough usage and are interchangeable.

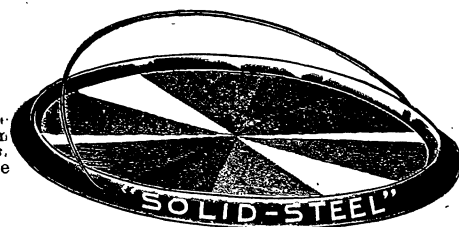
5th. The machine is TINED and NICKEL PLATED and is of very handsome appearance.

"SOLID-STEEL" SEAMLESS HOLLOW WARE.



BRILLIANT FINISH.

Notwithstanding the claims made by some manufacturers' agents, our spiders are made from Wrought Steel, Without Seams or Rivets, complete, from a single piece of metal. Write for prices. We manufacture our own goods.



No Seams, no Rivets in "Solid-Steel" Ware.

Made either with Balls or Solid Handles.

The Cleveland Stamping & Tool Co., Cleveland, O.

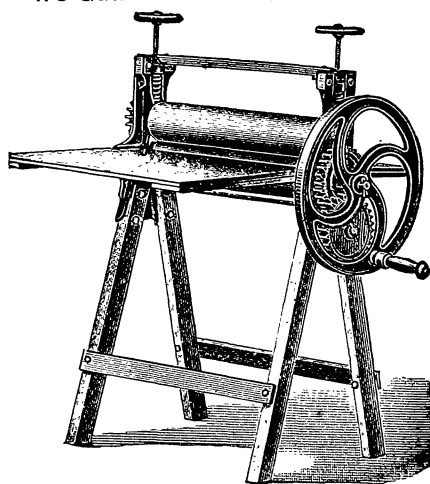
We do Light and Heavy Stamping and Blanking. Also build Dies and Stamping Machinery.

The Family Mangle.

WARRANTED TO DO
Better Work than Hand-work.

SAVES all the fuel,
two-thirds the work.
Keeps the linen whiter.

We Guarantee Every Machine.



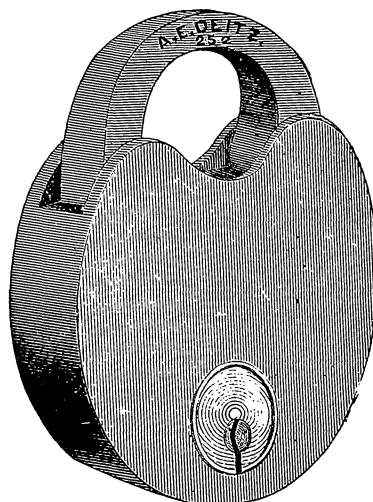
Send for descriptive circular to
S. C. Johnson, Racine, Wis.

Agents Wanted.

JACKETED KETTLES
HOLLOWARE.

THE STUART & PETERSON CO.,
Philadelphia, Pa., and Burlington, N. J.

A. E. DEITZ



J. C. McCARTY & CO., Agents,
97 Chambers and 81 Reade Sts., New York.

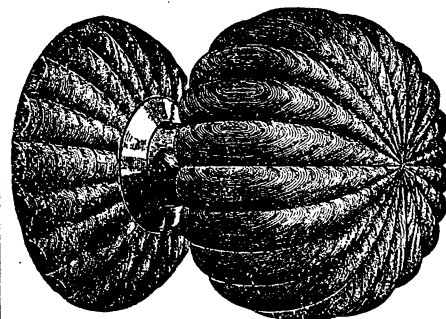
Factory, BROOKLYN, E. D., N. Y.

SASH WEIGHTS

E. E. BROWN & CO.,

McKean and Meadow Sts.,

PHILADELPHIA PA



WOOD DOOR KNOBS,
DOOR SPRINGS AND CHECKS
AND CHECKING SPRING HINGES.

NEW GOODS. NEW PRICES.

Send for New Price-List.

J. BARDSLEY, 149 & 151 Baxter St. New York.

NONPAREIL

Ratchet Wrenches.

Made of best forged Tool Steel; are easily and readily adjusted and controlled. Can be made reversible instantly without removing from their work by throwing over the lever in slot of the handle.

The Set of Combination Tools No. 1 includes the wrench, two sockets, one for screw-driver, bit or reamer-shank, with wood handle, and one socket



for drill shank and feed nut. The jaws on this wrench open from 3-16 to 1 1/4 inches.

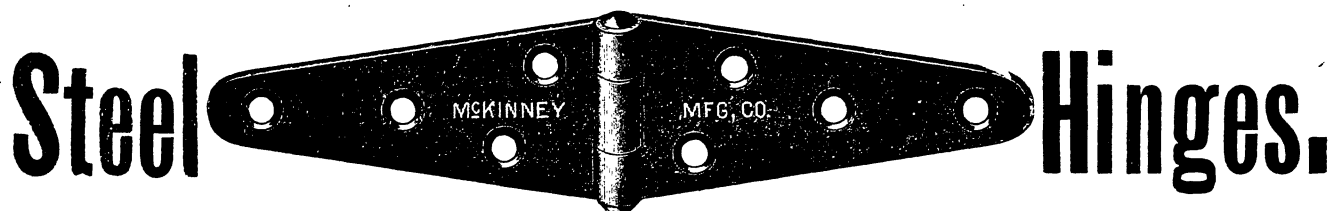
Send for Illustrated Circular and Price-list of various sizes

The Keystone Mfg. Co.,
312 Terrace, Buffalo, N. Y.

WE CLAIM

That one pair of our Celebrated Steel Hinges will outwear two pair of the Flimsy Invention now being forced upon the attention of the trade.

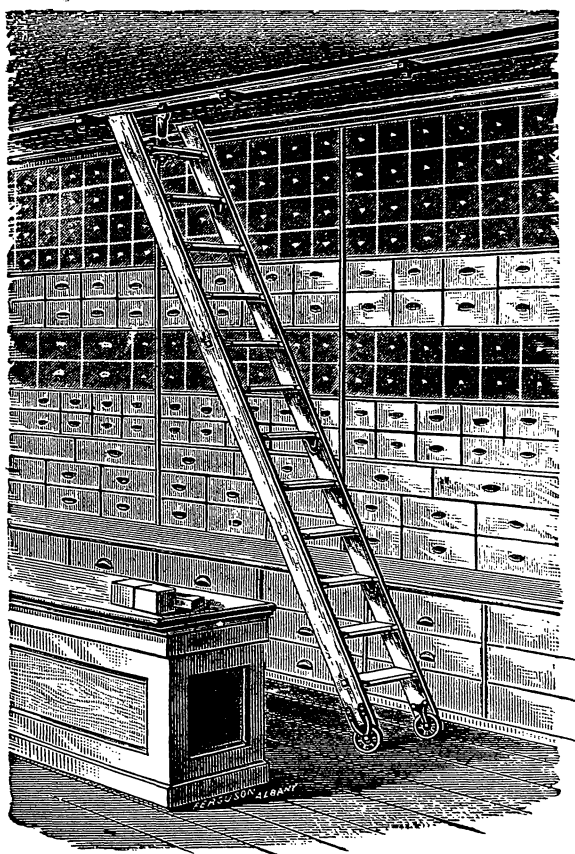
McKINNEY MFG. CO., ALLEGHENY, PA.



SEND FOR LIST.

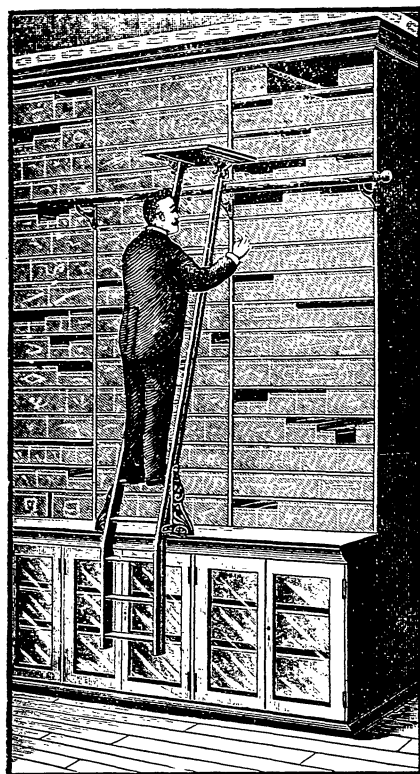
"NONE BETTER."

THE "NOISELESS" STORE LADDER.



The latest and best. Perfectly noiseless. Neat in appearance.

Manufactured by
M. CROISSANT,
ALBANY, N. Y.



THE BICYCLE STEP LADDER

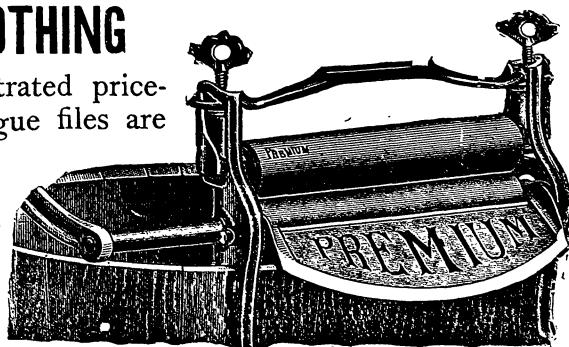
The Newest, Neatest, Simplest, Easiest Operated and Safest Store Ladder made.

Ladders are not *Suspended*, but *Supported* from below on wheels. Move easier with operator on than others when empty. Highly finished, and very handsome. Made in different grades and prices to suit. Send for illustrated catalogue and prices. See this space next week for other styles.

The Bicycle Step Ladder Co., 50 State Street, Chicago, Ills.

IT COSTS NOTHING

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YOU CAN OBTAIN PROMPTLY the latest work on any subject in which you are interested by addressing DAVID WILLIAMS, Publisher and Bookseller, 96-102 Reade Street, New York.

HARDWARE DEALERS

CAN RECOMMEND THE

CHAMPION METAL WINDOW SASH CHAINS

to their customers as a reliable substitute for Sash Cords, very strong and lasting (some in daily use ten years), and gives thorough satisfaction wherever used. The patented attachments are very simple and can be applied to any window.

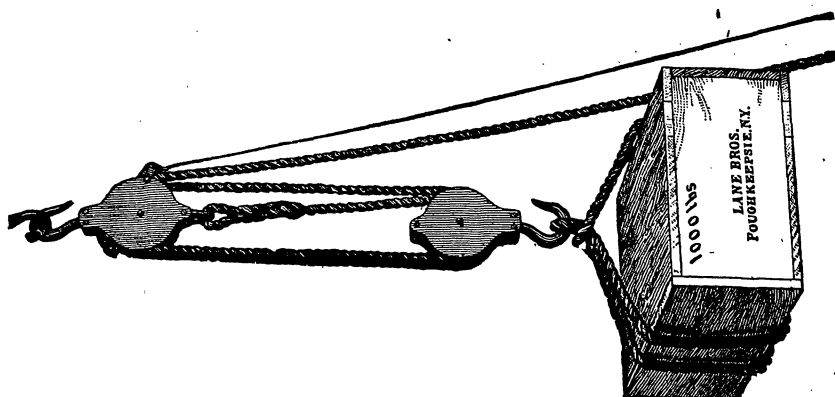
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"THOMAS MORTON,"

65 Elizabeth Street,

Write for Prices.

NEW YORK.



LANE'S SELF-LOCKING TACKLE BLOCKS,

Anti-Friction Steel Bushings,

Holds the load at any point, and always sure.

SEND FOR CIRCULAR.

For sale by the Hardware trade.

—MANUFACTURED BY—

LANE BROS.
POUGHKEEPSIE, N. Y.

He had in his possession 55 skeleton keys
which the police claim would open any door.
—Chicago Tribune.

You are selling that kind of a lock every day and

your customers think you are selling the best the market affords.

ARE YOU SELLING the best the market affords?

The Craig Locks are guaranteed Sneak Thief Proof.

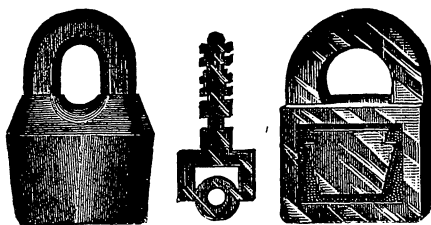
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KEYLESS LOCK CO., I. A. 197 So. Canal St., Chicago, Ill.

KEYSTONE LOCK WORKS,

—Established 1879.—

E. T. FRAIM, Lancaster, Pa., U. S. A.
MANUFACTURER OF



Patent Inter-Locking Tumbler Scandinavian or Jail
PADLOCKS, in 56 grades and sizes. Key and
Self-Locking. Brass, Bronze, Steel and Malleable
Iron. Red, Black, Bower-Barff and Bright Brown
finish. Also a full line of fine flat padlocks in Bronze
and Steel. All fully described and illustrated in our
new catalogue, furnished free to the trade.

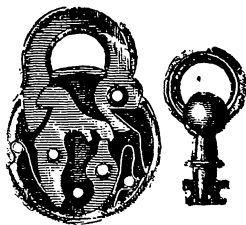
SURPLESS, DUNN & ALDER,

General Agents, 97 Chambers St., New York.

PATENT PERFECTION PADLOCK

Eight Tumblers. Key Turning Both Ways.

Sizes; $\frac{1}{4}$ inch to $2\frac{1}{2}$ inches; of cast bronze. Defies competi-
tion for quality and price. No steel or iron used, cannot rust, and
cannot be picked. Also, $\frac{1}{2}$ and $\frac{3}{4}$ inch Padlocks, opened with
a common pin, in brass and nickel, for cats and small dogs.
The best Railroad Switch and Car Lock in the world.
Adopted by the United States Treasury for bonded warehouses.



AMES SWORD CO., Chicopee, Mass.

Send for Price Lists and Circulars.

Merit Always Wins.

THE CALDWELL SASH BALANCE

Has been the standard for five years.

Write for our new catalogue of Hardware Specialties.

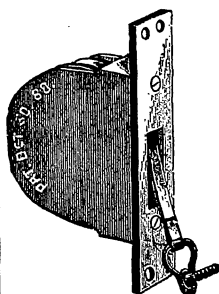
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READING HARDWARE CO., Agents.

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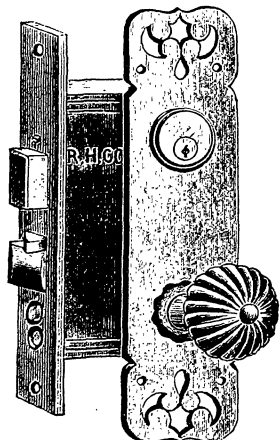


READING

HARDWARE COMPANY,

MANUFACTURERS OF

"VASSAR"
CYLINDER LOCKS



AND

Fine

Bronze

Goods

IN MANY

DESIGNS.

READING, PA.

NEW YORK. PHILADELPHIA. CHICAGO.



THE

"Champion" 6-Lever

"LEADS THEM ALL."

No other Padlock so secure as the "Champion," 1,000,-
000 changes of key available! None alike unless so ordered.
Compare this with the security of locks that yield only a dozen
or at best a gross of changes. **"Blood Will Tell."** Strictly
reliable goods build up the best trade and **lead on to fortune.**
All Jobbers sell the "Champion" 6-Lever Padlocks. The
Price alone renders them an object of surprise and profit.
Write us for **Illus. Cat. No. 10.**

MILLER LOCK CO.,

4515 Tacony Street, - PHILADELPHIA, PA.

SOLID BRAIDED SASH CORDS, &c.

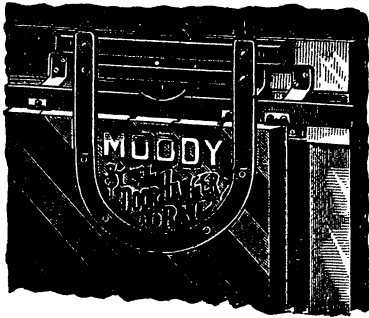
Picture Wire, Bright Wire Goods, Picture Nails,

Picture Hooks, Knobs, Chain and Wire Brads.

Mason Lines, Chalk Lines, Clothes Lines, Spool Wire,

OSSAWAN MILLS CO., Norwich, Conn

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STEEL RAIL.

Showing one-half set of hangers attached to door.



The Only Bracing Bracket Made.

HANGERS.	PRICE-LIST.	Per Doz. prs.
No. 5, to run 6 feet, 3 1/4 in. wheel,	-	\$10.00
No. 6, to run 10 feet, 4 1/4 in. wheel,	-	15.00
No. 7, to run 15 feet, 5 1/4 in. wheel,	-	22.00
RAIL, per foot.....		6 1/2 cents

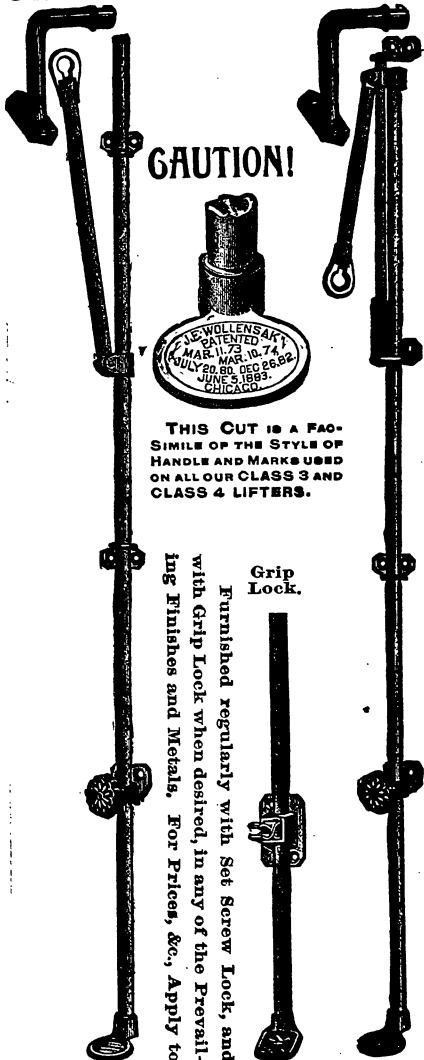
Transom...Lifters

OLD RELIABLE

J. F. WOLLENSAK'S PATENT.

CLASS 3.

CLASS 4.

**CAUTION!**

THIS CUT IS A FA-SIMILE OF THE STYLE OF HANDLE AND MARKS USED ON ALL OUR CLASS 3 AND CLASS 4 LIFTERS.

Furnished regularly with Set Screw Lock, and with Grip Lock when desired, in any of the Prevailing Finishes and Metals. For Prices, &c., Apply to

J. F. WOLLENSAK, CHICAGO, ILL.

**JESSE JONES & CO.,
HARDWARE
SHELF BOXES**

Made of Wood.
No screws or
nails used to work
out and cut
your shelving.

615 & 617 Commerce St., Phila.
Send for circular and list of references.

The Iron Age Hardware Price Book E.
WITH MULTIPLE INDEX.

7 x 10 inches, 350 pages, flexible seal grain
leather, with pocket; Crane's heavy
ledger paper, \$5.00.

Sent postpaid upon receipt of price.

DAVID WILLIAMS, 99-102 Reade St., New York.

SIMPLEST IN CONSTRUCTION.
EASIEST FITTED.**VANDERBILT
SASH
BALANCE**PAT. JULY 5-92
FEB 17-93Cheapest and Best
Balance Made.

WRITE FOR CATALOGUE.

**The Vanderbilt Sash Balance Co.,
CANANDAIGUA, N. Y.**General Agents, Harmon & Dixon, 118 Chambers St.
New York.**THE GEM
SOLID STEEL MINCER**Single
and
Double Blades.

Handle and Blade Formed in one piece.
Always Clean. Indestructible.
No Rivets to Wear Loose.
No Wooden Handle to Shrink, Swell, Loosen,
Split, or Fill with Rancid Grease.

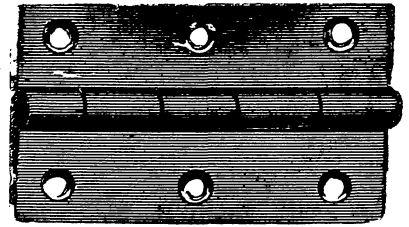
MANUFACTURED BY
PALMER HARDWARE MFG. CO.
TROY, N. Y.

**SHEETS,
COOKING UTENSILS,
MEDALS,**

Sheets and Rivets for Boats
and Coffins.

Bars for Horse Shoes.

ILLINOIS PURE ALUMINUM CO.,
LEMONT, ILLINOIS.

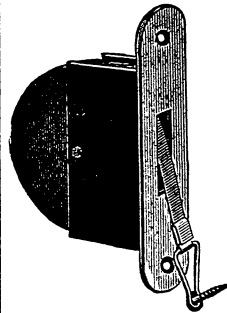
**Cast Brass Butt Hinges**

IN STOCK AND FOR SALE BY

W. & J. TIEBOUT,

Nos. 16 & 18 Chambers Street, New York.

MANUFACTURERS OF

**BRASS, GALVANIZED & SHIP CHANDLERY
HARDWARE.****AN ACTUAL NECESSITY**
with Architects, Builders,
and Railroad Corpora-
tions.Simple, economical,
and low in price.By using a steel
frame our balance is
much superior to
other makes.Can be applied to
old as well as new win-
dows.Requires no box
frames.

Warranted 15 years.

Cord lasts 5 years.

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PULLMAN SASH BALANCE CO., Rochester, N. Y.

New York Office, 142 Chambers St.

Chicago Office, 235 Lake St.

COMMON SENSE SASH BALANCE.

The Best and most Practical
substitute for weights invented.
The most Durable, the Cheap-
est and best device for all
ordinary windows. Balances
when in position are out of
sight. No rivets, bolts or
screws are used in putting it
together, so that nothing can
get out of order or need repair-
ing. No cutting, boring or
marring the sash, as the Bal-
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Manufacturers of Sash Balances, Sash
Locks, Sash Lifts, Monitor
Sad Irons.

STEWART & BAKER,

107 State Street, Rochester, N. Y.



N. Y. Office, 103 Chambers St., W. H. QUINN, Manager

**FROST'S ANTI-RATTLE**

Pat. Jan. 20, 1880.

Out One-half Size.

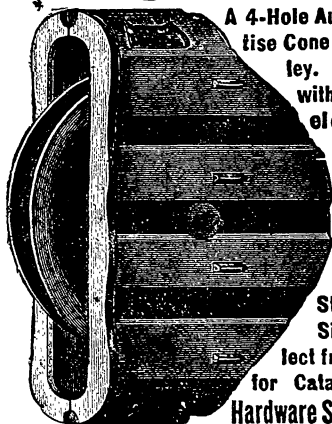
Sample pair sent to any hardware or saddlery firm by addressing

The Frost Thill Spring Co..

Boston, Mass.

THE WILCOX & HOWE COMPANY,
BIRMINGHAM, CONN.,
MANUFACTURERS OF**A Full Line of Carriage Hardware**
ALSO SPECIAL FORGINGS.

Estimates cheerfully given. Send for Catalogue

IDEAL SASH PULLEY.

A 4-Hole Auger Mortise Cone Axle Pulley. Applied without chisel or screws. Each Pulley its own marking gauge. A variety of Styles and Sizes to Select from. Ask for Catalogue of Hardware Specialties

STOVER MFG. CO.
145 River St., Freeport, Ill.**WE CLAIM**

THAT

Grennan's Sash Pulley Marker

For Common Sense Pulleys is a necessity although it is claimed that each pulley is

its own marker, which is true, but we can accurately mark ten while you are getting ready to use the pulley as a marker and also save a great deal of refitting. It will pay for itself the first time used. Price, \$1.25 each.

**Throop's Sash-Weight Fastener**

Saves 2 cents a window in cost of material, saves time and makes a neater and better job than tying a knot. Send for prices and circulars.

J. W. Skelly & Son, - BRISTOL, CT.

P. J. Conroy & Co.,

Paschall, PHILADELPHIA.

"CONROY"**Refrigerator Door****Fasteners**

Have rapidly supplanted all others.

Refrigerator Trimmings



Pat. Dec. 15 '85.



TRADE MARK.



All Tags and Labels on Covert Goods bear the above Trade-Mark, and are sold by all Leading Jobbers in General and Saddlery Hardware at Manufacturers' Prices.

**COVERT MFG. CO.,**

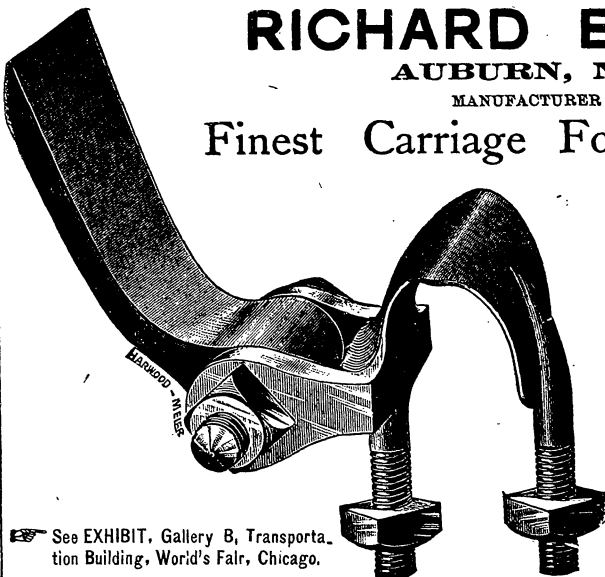
WEST TROY, N. Y.

RICHARD ECCLES,

AUBURN, N. Y.,

MANUFACTURER OF

Finest Carriage Forgings, Couplings, Clips, King Bolts, Fifth Wheels, &c. Manufacture a full line Special Drop Forgings.



See EXHIBIT, Gallery B, Transportation Building, World's Fair, Chicago.

Send for Catalogue.

WHY USE WOODEN OR HEAVY STEEL BLOCKS

WHEN THE STEEL AND IRON

TACKLE BLOCKS

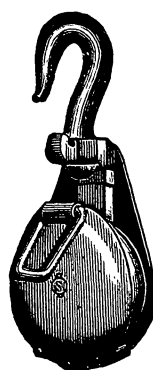
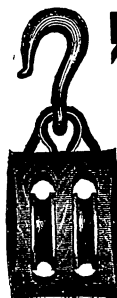
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The Cleveland Block Co.

CLEVELAND, OHIO, U. S. A.,

ARE BETTER IN EVERY WAY.

No waste material. Every ounce of weight in the line of strength. No clumsy outside straps or bolts. As light as wooden blocks and vastly more durable. They wear, but never break. Sheaves interchangeable.

General Agents: Topping Brothers, 92 Chambers Street, New York.
The H. Channon Co., 22 Market Street, Chicago.
New England Agents, - Dodge, Haley & Co., 212 High Street, Boston.**STEEL. WOOD OR IRON**

MADE BY

TOLEDO BLOCK WORKS.

511-513-515 Water St., TOLEDO, OHIO,

WILL PROVE SATISFACTORY

TO

USER.*Manufacture To Order*SPECIALTIES & NOVELTIES. PATENTED ARTICLES.
HARDWARE GOODS ETC., SMALL OR FINE MACHINERY.
SEND FOR CATALOGUE - CORRESPONDENCE SOLICITED**OTTO KONIGSLOW CLEVELAND, O.**

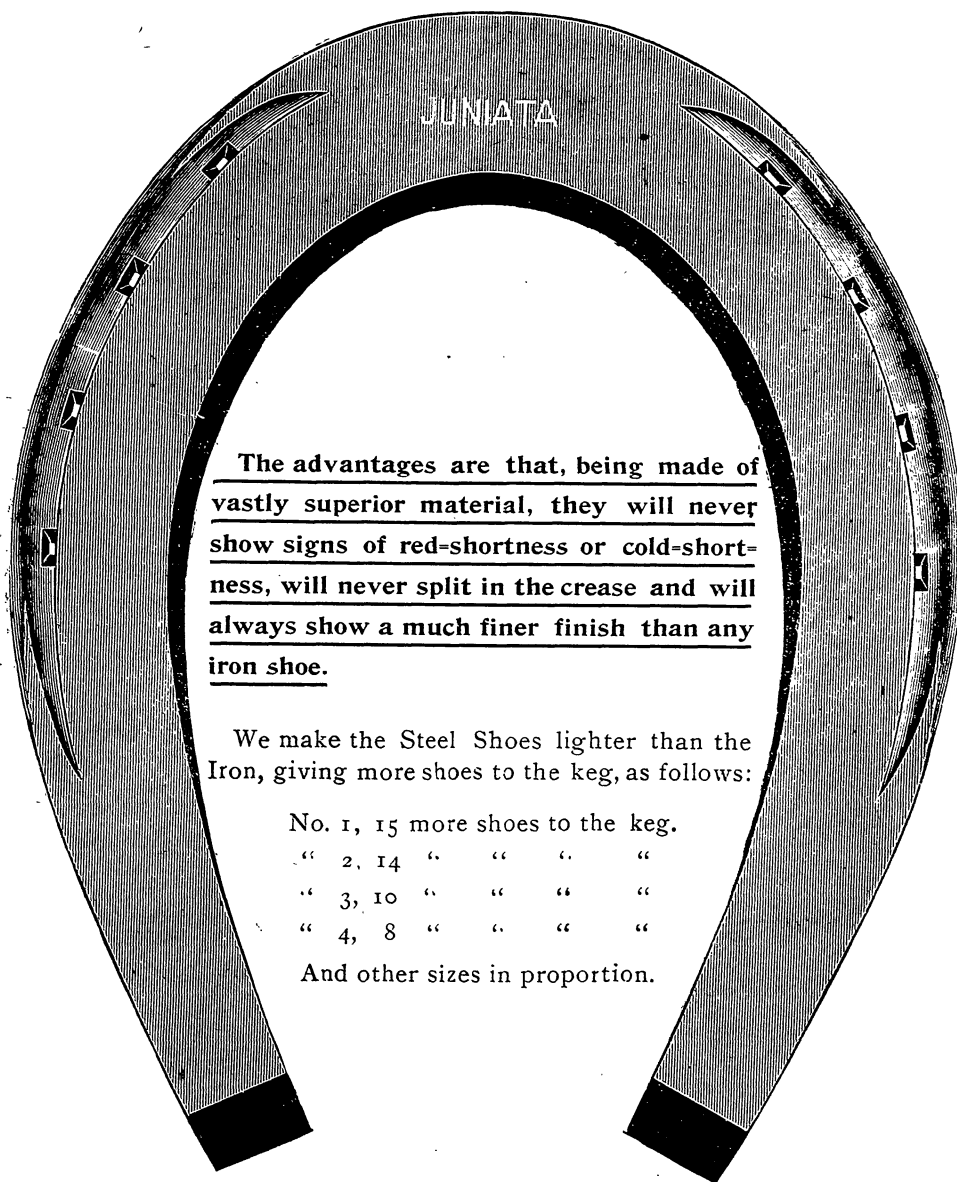
STEEL HORSE SHOES,

Like Steel Rails and Steel Nails,

HAVE COME TO STAY.

Shoenberger & Co., Pittsburgh, Pa.,

After numerous and costly experiments have succeeded in manufacturing a special quality of soft homogeneous steel, specially adapted to the manufacture of Horse and Mule Shoes and are now making from this steel Extra Swaged, Roadster and Government Pattern Horse and Mule Shoes. They give the best of satisfaction everywhere and we furnish them to the trade at the same prices as the regular iron shoe sold by ourselves and our competitors.



The advantages are that, being made of vastly superior material, they will never show signs of red-shortness or cold-shortness, will never split in the crease and will always show a much finer finish than any iron shoe.

We make the Steel Shoes lighter than the Iron, giving more shoes to the keg, as follows:

No. 1, 15 more shoes to the keg.

" 2, 14 " " " "

" 3, 10 " " " "

" 4, 8 " " " "

And other sizes in proportion.

No. 2 EXTRA SWAGED FRONT.

We also beg to say that we have introduced improved machinery into our new factory and have doubled our capacity, and are now prepared to furnish the best shoe, either iron or steel, ever offered to the trade.

We would also call your attention to our Improved Steel Toe Calk, equal to any in the market. To secure the best wearing qualities use sand or borax in welding on a calk and cool off at a dark red, or still better, cool off without plunging in water. We make sizes numbers 1, 2, 3, 4, 5 and 6, packed in 25-pound boxes.

Write to us for information and prices, or apply to jobbers and dealers, who sell them everywhere.

SHOENBERGER & CO.,

JUNIATA IRON AND STEEL WORKS, - - - PITTSBURGH, PA.

SCRANTON FORGING CO.,

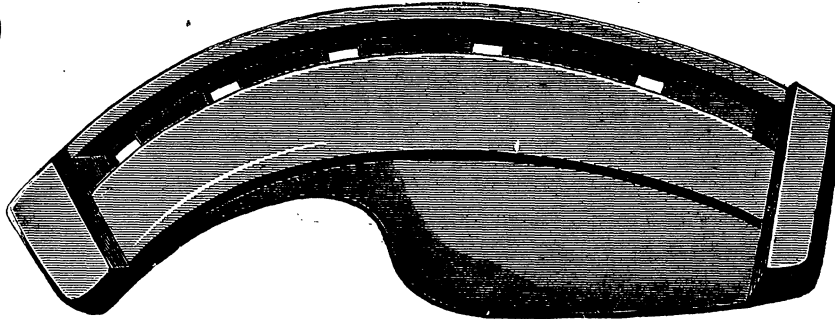
SCRANTON, PA.

**CARRIAGE HARDWARE AND
SPECIAL DROP FORGINGS.**

FORGED

OX

SHOES.



Made under Deebie's Patent, Aug. 9, 1887.

Our 1891 pattern is a modification of the style we have made for the past four years, giving additional strength to the web.

IT IS JUST RIGHT.**BURDEN'S
HORSE SHOES.**

"Burden Best"

Iron
Boiler Rivets.

The Burden Iron Co.

TROY, N. Y.

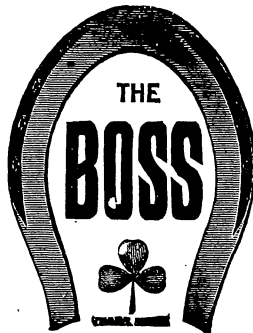
Standard Horse Shoe Co.,

Manufacturers of

HORSE AND MULE SHOES.

LEEDS, ROBINSON & CO., General Agents,

75 North Street, Boston, Mass.

Crescent**Horse and Mule Shoes,****BAR IRON.****CRESCENT HORSE SHOE AND****IRON CO.,****Max Meadows, Va.****HORSE AND MULE SHOES.**

Superior Quality, Shape and Finish.

BRYDEN HORSE SHOE CO.,**CATASAUQUA, PA.****RHODE ISLAND PERKINS HORSE SHOE CO.,**
MANUFACTURERS OF**Horse and Mule Shoes of the Perkins Pattern.**

SPECIALTIES:—X L Steel Shoes, Toe Weight Shoes and Goodenough Shoes.

Works at Valley Falls, R. I.

Office, 31 Exchange Place, Providence, R. I.

F. W. CARPENTER, Pres.,

C. H. PERKINS, Gen. Manager,

R. W. COMSTOCK, Sec'y,

CHARLES R. STARK, Treas.

J. C. McCARTY & CO., Agents - 97 Chambers Street, New York.**THE NEW DIAMOND STATE HORSE AND
MULE SHOES.****JUST TRY THEM and YOU will say they excel all others.**

MANUFACTURED BY

DIAMOND STATE IRON CO.**WILMINGTON, DELAWARE.**

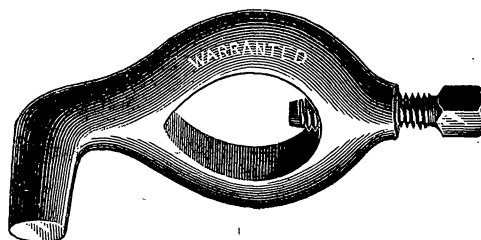
Other "high grade" specialties in Rivets, Spikes, Splice Bars, Track and Machine Bolts, Blank Nuts, Stay Bolt Iron, Horse Shoe Iron, Bar Iron, &c.

PHILADELPHIA OFFICE,
206 So. Fourth St.

{Correspondence invited}

NEW YORK OFFICE
11 Pine St.**LE COUNT'S HEAVY STEEL DOG,**

With Steel Screws. U. S. Standard and the points hardened.



1.....	3/8.....	\$0 40	13.....	2 1/4.....	\$1 35
2.....	1/2.....	50	14.....	2 1/2.....	1 45
3.....	5/8.....	60	15.....	3.....	1 60
4.....	3/4.....	60	16.....	3 1/2.....	1 80
5.....	7/8.....	70	17.....	4.....	2 10
6.....	1.....	70	18.....	4 1/2.....	2 75
7.....	1 1/4.....	80	19.....	5.....	3 25
8.....	1 1/2.....	80	Full set of 19, \$23.00.		
9.....	1 3/4.....	95	20(extra)	5 1/2.....	4 00
10.....	2.....	95	21.....	6.....	5 00
11.....	2 1/4.....	1 10	22.....	7.....	6 00
12.....	2 1/2.....	1 20	23.....	8.....	7 00
One small set of 8, by 1/4 in. to 2 in. 6 25					
One set of 12, by 1/4 in. to 2 in., continued by 1/4 in. to 4 in. 13 20					

When ordering, state as above, whether a full set, or a set of 12, or small set of 8, is wanted. j.

SEND FOR CATALOGUE OF FULL LINE OF MACHINISTS' TOOLS.

C. W. LE COUNT, MANUFACTURER, SO. NORWALK, CONN., U. S. A.
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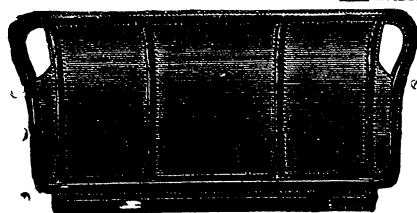
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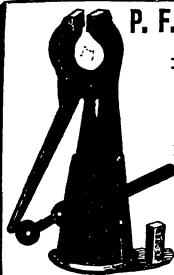
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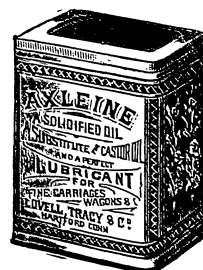
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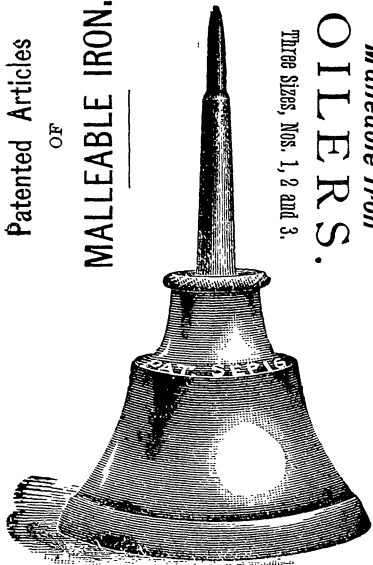
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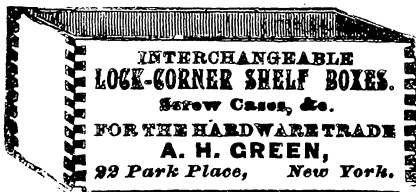
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Superior in strength and ease of operation.
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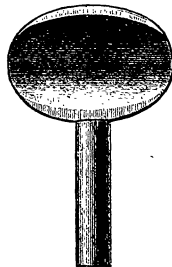
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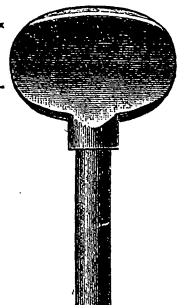
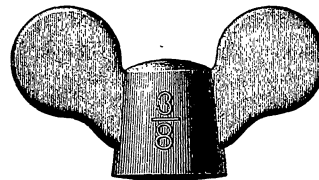
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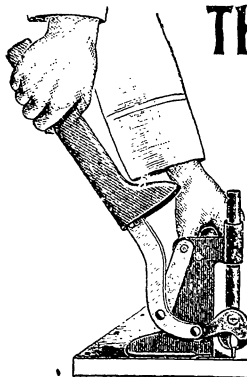


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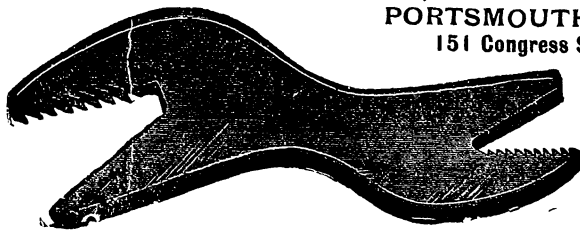
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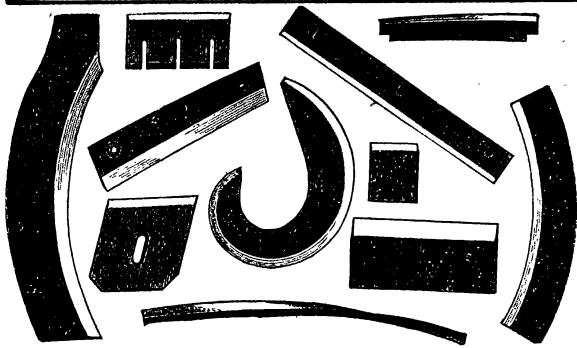
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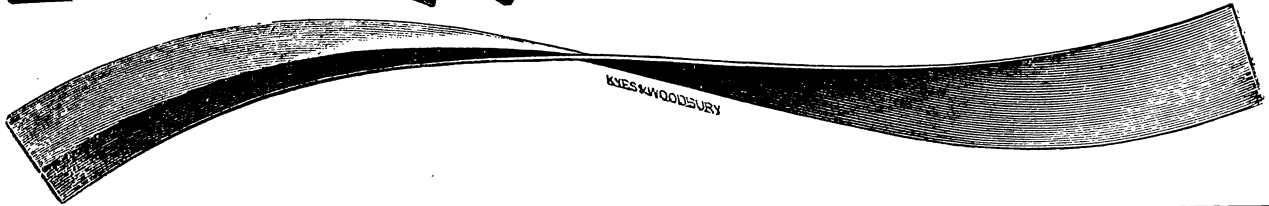
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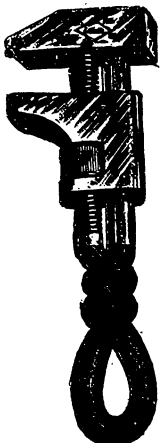
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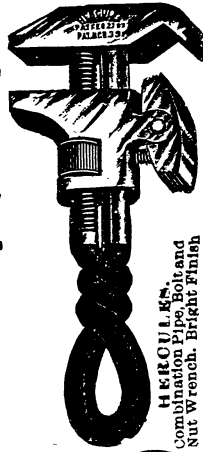
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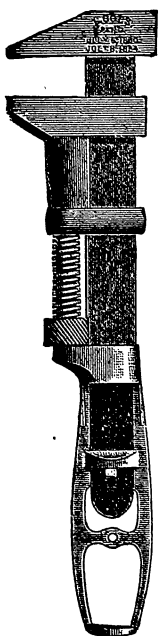


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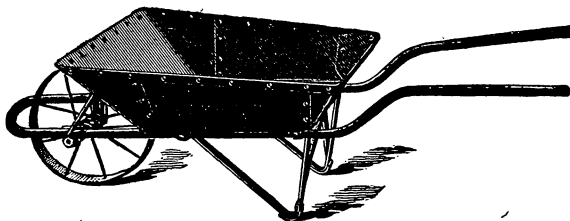


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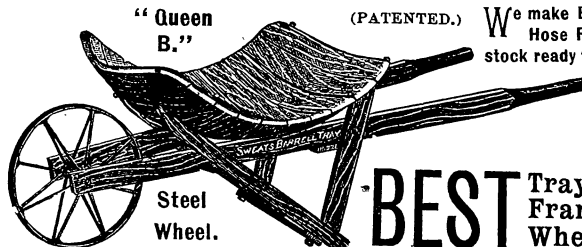
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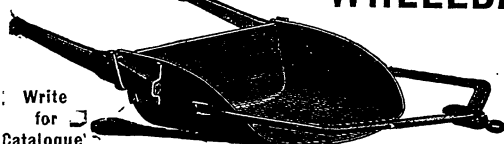
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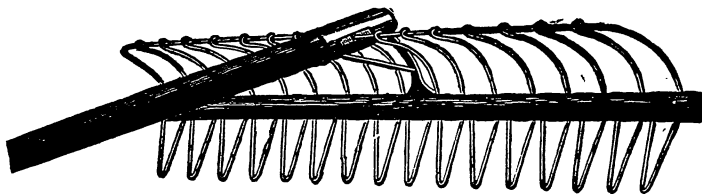
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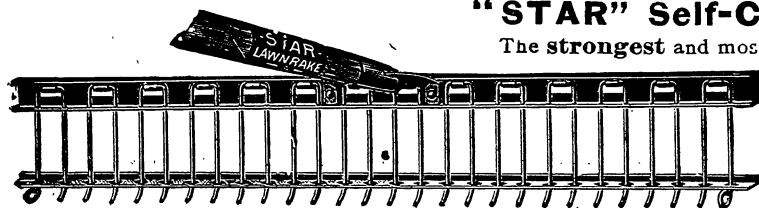
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Both good and each the best. If you have not stocked up, better do so at once. Our prices are low.

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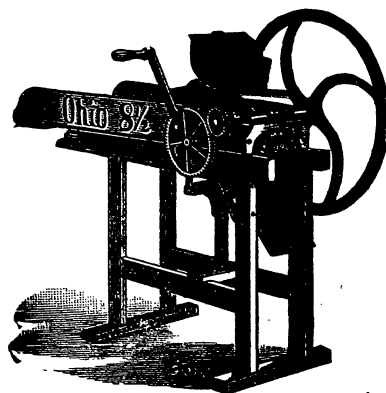


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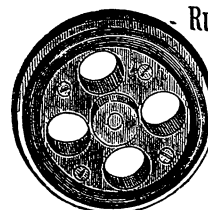
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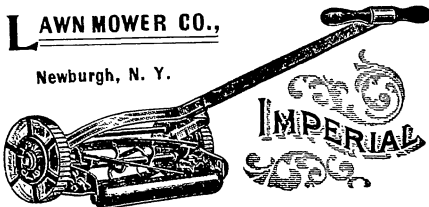
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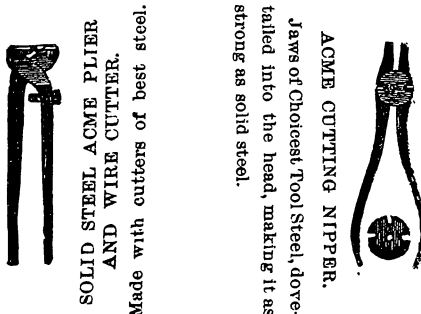
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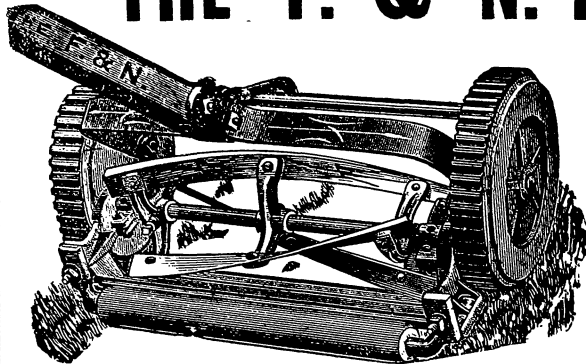
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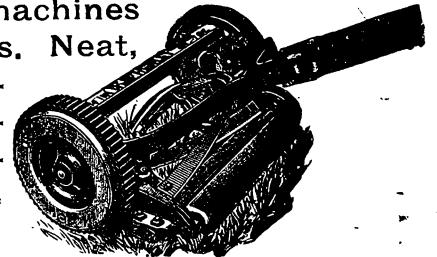
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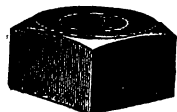


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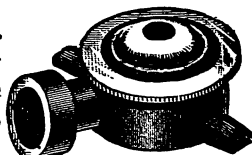


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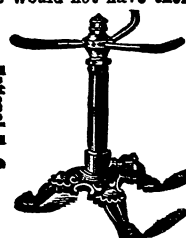


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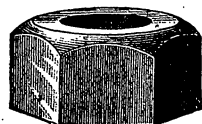
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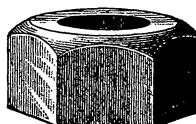
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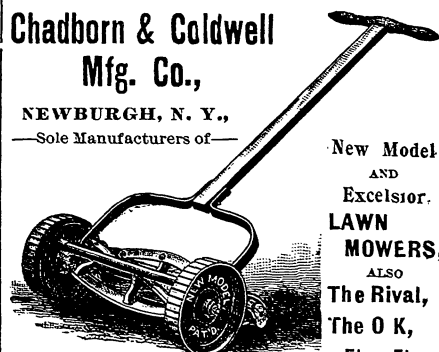
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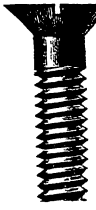
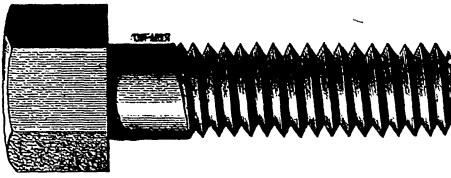
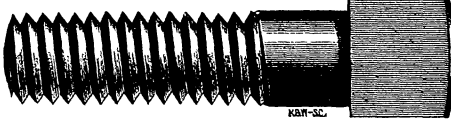




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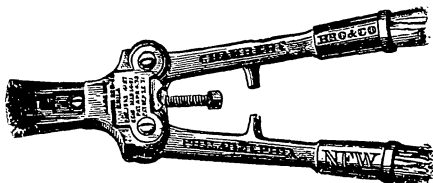
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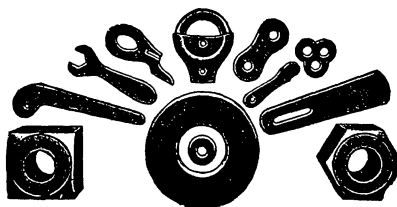
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McCaffrey File Co., Philadelphia.
Nicholson File Co., Providence R. I.

Fire Brick. Makers of.

Borgner, Cyrus, Philadelphia, Pa.
Gardner, Jas. & Son, Cumberland, Md.
Kreischer & Sons, foot E. Houston, St. McLeod & Henry Co., Troy, N. Y.
Maurer, H. & Son, 420 E. 23d, N. Y.
Outlander Fire Brick Co., Troy, N. Y.
Valentine, M. D. & Bro., Woodbridge.

Fire Sets.

Troy Nickel Works, Troy, N. Y.

Fishing Tackle.

Dame, Stoddard & Kendall, Boston, Mass.

Flint and Emery Paper.

Baeder, Adamson & Co., Phila., Pa.

Fodder Cutters.

Silver Mfg. Co., Salem, O.

Forges. Portable. &c.

Bullock Bellows Co., Cleveland, O.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Empire Portable Forge Co., Lansingburg, N. Y.
Foss Mfg. Co., Springfield, Ohio.
Sturtevant, B. K. Co., Boston, Mass.

Forgings. Iron and Steel.

Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Steel-Cambria Iron Co., Johnstown, Pa.
Scranton Forging Co., Scranton, Pa.

Foundry Facings.

Chicago Fdy. Supply Co., Chicago, Ill.
Paxson, J. W. & Co., Phila.
S. Obermayer Co., Cincinnati, O.
Smith, J. D. Fdy. Supply Co., Cin., O.

Foundry Riddles.

Estey, W. S., 65 Fulton, N. Y.

Foundry Supplies.

Chicago Fdy. Supply Co., Chicago, Ill.
Colliau, Victor, Detroit, Mich.
S. Obermayer Co., Cincinnati, O.
Paxson, J. W. & Co., Philadelphia.
Smith, J. D. Fdy. Supply Co., Cin., O.

Friction Clutches.

Keystone Clutch & Mch. Wks., Phila., Pa.
Moore & White Co., Philadelphia, Pa.

Fruit Presses.

Enterprise Mfg. Co., Philadelphia, Pa.

Furnaces, Foundry.

Byram & Co., Detroit, Mich.

Gas Producers.

Wood, R. D. & Co., Philadelphia, Pa.

Gas & Steam Fitters' Supplies.

Pancoast, Henry B. & Co., Phila., Pa.

Gauge, Rolling Mill.

Haines Gauge Co., Philadelphia, Pa.

Gear Cutters.

D. E. Whiton Mach. Co., New London, Conn.

Gears.

Boston Gear Works, Boston, Mass.
New Process Raw Hide Co., Syracuse, N. Y.
Poole, Robt. & Son Co., Baltimore, Md.

Glass Tubes.

Ashcroft Mfg. Co., 111 Liberty St., N. Y.

Glass Boards.

Canton Saw Co., Canton, O.

Glass Cutters.

Monce, S. G., Bristol, Conn.

Glue.

Baeder, Adamson & Co., Phila., Pa.
Russia Cement Co., Gloucester, Mass.

Grass Catchers.

Supplies Hardware Co., Phila., Pa.

Grinding Mills.

Foss Mfg. Co., Springfield, O.

Grinding and Polishing Machines.

Norton Emery Wheel Co., Worcester, Mass.
Washburn Shops, Worcester, Mass.

Grindstone Dressing Machinery.

Blake & Johnson, Waterbury, Conn.

Grindstones.

Cleveland Stone Co., Cleveland, O.

Gunpowder. Makers of.

Lanin & Rand Powder Co., 29 Murray St., N. Y.

Hand Carts.

Lansing Wheelbarrow Co., Lansing, Mich.

Halter Chains.

Kelly & Woolworth, Niagara Falls, N. Y.

Handles.

New Process Raw Hide Co., Syracuse, N. Y.
New York Mallet and Handle Wks., 456 E. Houston St., N. Y.

Hangers. Door.

Chicago Spring Butt Co., Chicago, Ill.
Lane Bros., Poughkeepsie, N. Y.
Victor Mfg. Co., Newburyport, Mass.

Hardware Comm'n Merchants.

Doscher, Martin, 88 Chambers, N. Y.
Field, Alfred & Co., 98 Chambers St., N. Y.
Graham, John H. & Co., 111 Chambers St., New York.
Jacobus, W. H., 90 Chambers, N. Y.

Hardware Manufacturers.

Hotchkiss, E. S., Bridgeport, Conn.
Searns, E. C. & Co., Syracuse, N. Y.
Union Mfg. Co., 103 Chambers, N. Y.
Yale & Towne Mfg. Co., Stamford, Conn.

Hardware Mfrs. Agents.

Bingham, W. Co., Cleveland, O.
Graham, John H. & Co., 113 Chambers, Hursey E. J. & Co., 80 John St., N. Y.
McCoy, Jos. E. Co., 26 Warren St., N. Y.
Sickles Sweet & Lyon, 35 Barclay, N. Y.
Underhill, Clinch & Co., 94 Chambers St., N. Y.

Hardware Specialties.

Aome Shear Co., Bridgeport, Conn.
Belden Machine Co., New Haven, Conn.
Empire Portable Forge Co., Lansingburg, N. Y.
Enterprise Mfg. Co., Philadelphia, Pa.
Erie & Henger Mfg. Co., St. Louis, Mo.
Haines & Zimmerman, Phila., Pa.
Hart, E. O. Mfg. Co., Detroit, Mich.
Henn, A. S. & Co., New Haven, Conn.
Johnson, S. C., Racine, Wis.
Knapp & Cowles Mfg. Co., Bridgeport, Conn.
North Bros. Mfg. Co., Philadelphia, Pa.
Peabody & Parks, Troy, N. Y.
Welland, Chas., 143 Chambers St., N. Y.
Wilson, J. Fred, Worcester, Mass.
Wire Goods Co., Worcester, Mass.
Underhill, Clinch & Co., 94 Chambers Street, N. Y.

Hardware. Yacht and Ship.

Ferdinand, L. W. & Co., Boston, Mass.

Harness Snaps.

Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Wks., Farmer, N. Y.
Fitch, W. & E. T., New Haven, Conn.

Hay Knives.

Holt, Hiram, Co., E. Wilton, Me.

Hoisting Machines.

Box, Alfred & Co., 314 Green, Phila.
Jrue & Conveying Mch. Co., Cleveland, Ohio.
Fulton Iron & Engine Wks., Detroit, Mich.

Harrington, E., Son & Co., Phila.

Lane Bros., Poughkeepsie, N. Y.
Lidgerwood Mfg. Co., 86 Liberty, N. Y.
Maris Beekley, Philadelphia.
Moore Mfg. & Fdy. Co., Milwaukee, Wis.
Morse, Williams & Co., Phila.
Sellers, Wm. & Co., Phila. and N. Y.
Speldel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., Stamford, Ct.

Hollow Ware.

Bronson Supply Co., Cleveland, Ohio.
Cleveland Stamping & Tool Co., Cleveland, O.
Stuart & Peterson Co., Phila., Pa.

Hollo Ware. Aluminum.

Illinois Pure Aluminum Co., Lemont, Ill.

Horse and Barbers' Clippers.

Hotchkiss, E. S., Bridgeport, Conn.

Horse Nails. Makers of.

National Horse Nail Co., Vergennes, Vt.

Horse Shoes. Makers of.

Bryden Horse Shoe Co., Catsanauqua, Pa.
Burden Iron Co., Troy, N. Y.
Crescent Horse Shoe & Iron Co., Max Meadows, Va.
Diamond State Iron Co., Wilmington, Del.
Old Dominion Iron & Nail Works Co., Richmond, Va.
Phoenix Horse Shoe Co., Poughkeepsie, N. Y.
Rhode Island Perkins Horse Shoe Co., Providence.
Shoenberger & Co., Pittsburgh, Pa.
Standard Horse Shoe Co., Boston, Mass.

Hose.

Cleveland Rubber Co., Cleveland, O.
N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.

Hotels.

The Audubon, Chicago, Ill.

Hydrants, &c.

McLean, John, 296 & 298 Monroe, N. Y.

Hydraulic Jacks.

Dudgeon, Richard, 24 Columbia, N. Y.
Watson & Stillman, 204 E. 43d, N. Y.

Ice-Cream Freezers.

North Bros. Mfg. Co., Phila., Pa.
Parker, C. W., Philadelphia, Pa.
White Mountain Freezer Co., Nashua, N. H.

Ice Shavers.

Enterprise Mfg. Co., Philadelphia, Pa.

Ice Tongs.

Stoppard, Robt, Auburn, N. Y.

Injectors.

Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., New York

Insurance. Boiler.

Hartford Steam Boiler Inspection & Insurance Co., Hartford Conn.

Iron and Steel, Swedish.

Lundberg, Gustaf, Boston, Mass.
Milne, A. & Co., 1 Broadway, N. Y.

Iron Commission Brokers.

Corning, Edw. & Co., 29 B'way, N. Y.
Cotton, Bradley & Co., Philadelphia.
Etting, Edw. J., Philadelphia.
Hogan, John L. & Co., Philadelphia, Pa.
Hoffman, J. W. & Co., Philadelphia.
Levis, Henry & Co., Philadelphia.
Keeley, Jerome & Co., Philadelphia.
Lea, J. Tammil & Co., Philadelphia.
Mohr, J. J., 430 Walnut, Philadelphia.
Mann, E. R. & Co., Philadelphia.
Pilling & Crane, Philadelphia, Pa.
Sibell, Geo. H. & Co., Chicago, Ill.
Water, L. & R. & Co., Phila., Pa.

Iron Ore.

Naylor & Co., 45 Wall, N. Y.
Pickands, Brown & Co., Chicago, Ill.
Pullman, J. Wesley, Phila., Pa.
Samuel, Frank, Philadelphia, Pa.

Iron. Merchants.

Barnes, O. K. & Co., Philadelphia, Pa.
Borden & Lovell, 70 West, N. Y.
Busenius & Currier, Philadelphia.
Corning Edw. & Co., 29 B'way, N. Y.
Cox, Justice, Jr., Philadelphia.
Cotton, Bradley & Co., Philadelphia.
Hoffman, J. W. & Co., Philadelphia.
Leonard, J., 440 West St., N. Y.
New York Co., 45 Wall St., N. Y.
Nichols, Wheeler & Co., Philadelphia.
Ogden & Wallace, 85 Elm St., N. Y.
Pickands, Brown & Co., Chicago, Ill.
Pierson & Co., 29 Broadway, N. Y.
Richards, D. W. & Co., 88 Manvint St., N. Y.
Thomson, W. H. & Co., Phila., Pa.
Wallace, Wm. H. & Co., Albany & Washington streets, N. Y.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wilson, E. H. & Co., Philadelphia.

Iron. Importers.

Abbott, Jere & Co., N. Y. and Boston.
Lundberg, Gustaf, Boston, Mass.

Iron. Sheet. Manufacturers of.

Cambridge Iron & Steel Co., Cambridge Ohio
W. Dewees Wood Co., Lim., McKeesport, Pa.

Ironwork. Ornamental.

Barnum, E. T., Detroit, Mich.
Champion Iron Co., Kenton, O.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Mast, Foss & Co., Springfield, O.
The Van Dorn Iron Works Co., Cleveland, O.

Keys.

Wollensak, J. F., Chicago, Ill.

Ladies.

Detroit Fdy. Equipment Co., Detroit, Mich.

Lamp Stoves.

Glazier Stove Co., Chelsea, Mich.

Lamps.

Standard Lighting Co., Cleveland, O.

Lanterns.

Dietz, R. E. Co., 60 Laight St., N. Y.
Ohio Lantern Co., Tiffin, Ohio.
Steam Gauge & Lantern Co., Syracuse, N. Y.

Lathes.

Draper Machine Tool Co., Worcester, Mass.
Johnson, Israel H., Jr., & Co., Philadelphia, Pa.
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Lathing. Wire.

Clinton Wire Cloth Co., Clinton, Mass.
N. J. Wire Cloth Co., Trenton, N. J.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Laundry Machines.

Johnson, S. C., Racine, Wis.

Lawn Mowers.

Chadborn & Coldwell Mfg. Co., Newburg, N. Y.
Coldwell Lawn Mower Co., Newburg, N. Y.
F. & N. Mfg. Co., Richmond, Ind.
Henley, M. C., Richmond, Ind.
Lape, W. E., Syracuse, N. Y.
Mast, Foss & Co., Springfield, O.
Searns, E. C. & Co., Syracuse, N. Y.
Supplies Edw. Co., Phila., Pa.

Lawn Rakes.

Schaeffer & Co., Dayton, Ohio.
Syracuse Specialty Mfg. Co., Syracuse N. Y.

Lawn Sprinklers.

Ette & Henger Mfg. Co., St. Louis.
McGowan, John H. Co., Cincinnati, O.

Lawn Sweepers.

Lape, W. E., Syracuse, N. Y.

Lemon Squeezers.

Ripley Mfg. Co., Unionville, Conn.

Letters and Figures. Metallic.

White, A. A. & Co., Providence, R. I.

Letters. Paper.

Tablet & Ticket Co., Chicago, Ill.

Levels.

Cook, Watertown, N. Y.
Richardson, C. F., & Son Athol, Mass.

Machinery.

Am. Tool Works, Cleveland, Ohio.
 Barnes, W. F. & John, Rockford, Ill.
 Bement, Miles & Co., Philadelphia, Pa.
 Bigelow, C. E., 45 Day, N. Y.
 Bignall & Keeler Mfg. Co., St. Louis.
 Birmingham Iron Foundry, Birmingham, Ala.
 Bliss, E. W. Co., Brooklyn, N. Y.
 Bogert, Jno. L., Flushing, N. Y.
 Briggs, Marvin, 12 Broadway, N. Y.
 Carlin's Sons, Thos., Allegheny, Pa.
 Chin, Milling Mch. Co., Cincinnati, Ohio.
 Clapp, Geo. M., agt., 74 Cortlandt, N. Y.
 Coulter & McKensie Mch. Co., Bridgeport, Conn.
 Cruikshank, D. B., Providence, R. I.
 Detrick & Harvey Mch. Co., Baltimore, Md.
 Fitchburg Mch. Works, Fitchburg, Mass.
 Garvin Mch. Co., Light & Canal Sts.
 Gould & Eberhardt, Newark, N. J.
 Hamilton Mch. Tool Co., Hamilton, O.
 Harrington, E. Son & Co., Phila.
 Henderson, A. L., Wilmington, Del.
 Hendey Machine Co., Torrington, Ct.
 Hill, Clarke & Co., Boston, Mass.
 Ingersoll Milling Machine Co., Rockford, Ill.
 Johnson, Israel H., Jr., & Co., Phila.
 Jones & Lamson Mch. Co., Springfield, Vt.
 Kelly, Daniel, Phila., Pa.
 Lodge & Snipley Mch. Tool Works, Cincinnati, O.
 Lovegrove & Co., Philadelphia, Pa.
 McCabe, J. J., 68 Cortlandt, N. Y.
 Machinists Supply Co., Rochester, N. Y.
 Manville, E. J. Mch. Co., Waterbury, Conn.
 Morton Mfg. Co., Muskegon Heights, Mich.
 Newark Mch. Tool Works, Newark, N. J.
 New Haven Mfg. Co., New Haven, Conn.
 New York Mach'y Depot, N. Y.
 Niles Tool Wks., 138 Liberty St., N. Y.
 Pedrick & Ayer, Philadelphia, Pa.
 Pittsburgh Mfg. Co., Pittsburgh, Pa.
 Place, Geo., 120 Broadway, N. Y.
 Poole, Robt. & Son Co., Baltimore, Md.
 Powell Planer Co., Worcester, Mass.
 Pratt & Whitney Co., Hartford, Conn.
 Prentiss Tool & Supply Co., N. Y.
 Scranton Supply & Mchry. Co., Scranton, Pa.
 Sellers, Wm. & Co., Phila.
 Seyfert's Sons L. F., Philadelphia, Pa.
 Steptoe, J. & Co., Cincinnati, O.
 Stow Flexible Shaft Co., Ltd., Phila.
 Toomey, Frank, Philadelphia, Pa.
 Wetherill, Robert & Co., Oneater, Pa.
 Wilson, W. A., Rochester, N. Y.
 Woodruff Mfg. Co., Hartford, Conn.

Machinery for Hardware Manufacture.
 Adt, Jno. & Son, New Haven, Conn.

Machine Knives.
 Loring Coes & Co., Worcester, Mass.
 Loyd, John, 558-562 Water St., N. Y.

Machine Tools.—See machinery.

Machine Work.
 Papping, J., 58th St., & 11th Ave., N. Y. City.

Machinists' Scales.
 Coffin & Leighton, Syracuse, N. Y.
 Starrett L. S., Athol, Mass.

Machinists' Tools and Supplies.
 King, J. M. & Co., Waterford, N. Y.
 Sellers, Wm. & Co., Inc., Phila.

Mallets.
 N. Y. Mallet & Handle Works, N. Y.

Mangles.
 Johnson, S. C., Racine, Wis.

Manufacturing Sites.
 Chicago, Milwaukee & St. Paul R. R., Chicago, Ill.

Measuring Tapes.
 Keuffel & Esser Co., 127 Fulton St., N. Y.
 Lukin Rule Co., Saginaw, Mich.

Meat Cutters.
 Enterprise Mfg. Co., Philadelphia, Pa.

Metals.
 Fearing, Wm. S., 100 Chambers, N. Y.
 Hendricks Bros., 49 Cliff, N. Y.
 Naylor & Co., 45 Wall, N. Y.

Metal Brokers.
 American Metal Co., N. Y.

Metallurgists.
 Britton J. Blodgett, Phila.

Metal Saws.
 Q & O Co., Chicago, Ill.

Milling Machines.
 Chin, Milling Mch. Co., Cincinnati, Ohio.
 Ingersoll Milling Machine Co., Rockford, Ill.
 Pedrick & Ayer, Phila. Pa.

Winning Knives.
 Palmer Hdw. Mfg. Co., Troy, N. Y.

Mine Lamps.
 Darby, Edw. & Sons, Phila. Pa.
 Leonard, B. E., Scranton, Pa.
 Leonard, T. F., Scranton, Pa.

Mining Screens.
 Harrington & King Perforating Co., Chicago, Ill.
 Hendrick Mfg. Co., Ltd., Carbondale, Pa.
 Howard & Morse, 45 Fulton, N. Y.

Mirrors.
 Rice, C. F., Chicago, Ill.

Molding Sand.
 Chicago Foundry Supply Co., Chicago, Ill.
 Obermayer, S. Co., Cincinnati, O.
 Paxson, J. W. & Co., Phila.

Motors, Water and Electric.
 O. & C. Electric Motor Co., 402 and 404 Greenwich St., N. Y.
 Dallett, Thos. H. & Co., Phila. Pa.

Mail Machinery.
 Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nails (Cut) and Spikes.

Borden & Lovell, 70 West, N. Y.
 Cumberland Nail & Iron Co., Phila.
 Oxford Iron Co., 81 Washington, N. Y.
 Pottstown Iron Co., Pottstown, Pa.
 Riverside Iron Wks., Wheeling, W. Va.

Nickel Platers' Supplies.
 Eddy Electric Mfg. Co., Windsor, Conn.
 Zuckor & Levent, Chemical Company, 10 to 14 Grand St., N. Y.

Norway Shapes, Rollers of.
 Rowland, William & Harvey, Frankford, Philadelphia

Nut Machines.
 Dunham Nut Mch. Co., Unionville, Ct.

Nuts, Bolts, &c., Makers of.
 American Bolt Co., Lowell, Mass.
 American Screw Co., Providence, R. I.
 Blake & Johnson, Waterbury, Conn.
 Tackell, Wm. H. Co., Pawtucket, R. I.
 M. Carmel Bolt Co., Mt. Carmel, Conn.
 Chester Bolt and Nut Co., Chester, N. Y.
 Russell, Burdall & Ward, Port Chester, N. Y.
 Sternberg, J. B. & Son, Reading, Pa.
 Wilson, J. Fred., Worcester, Mass.
 Wm. H. Haskell Co., Pawtucket, R. I.

Oil Stones.
 Pike Mfg. Co., Pike Station, N. H.

Oil Stoves.
 Glazier Stove Co., Chelsea, Mich.

Ores.
 Wister, Francis, Philadelphia, Pa.

Ex Shoes.
 Scranton Forging Co., Scranton, Pa.

Packing.
 Billington, Jas. H. & Co., Phila. Pa.
 Morrison, Robt., St. Louis, Mo.
 N. Y. Beltine & Packing Co., Ltd., N. Y.

Paddles.
 Ames Sword Co., Chicopee, Mass.
 Fram, E. T., Lancaster, Pa.
 Hillebrand & Wolf, Phila. Pa.
 Miller Lock Co., Philadelphia, Pa.

Paint.
 Dixon, Jos. Crucible Co., Jersey City, N. J.
 Garry Iron & Steel Roofing Co., Cleveland, O.

Paint Burners.
 Dangler Stove & Mfg. Co., Cleveland, O.

Paint Cans.
 Wilnot & Hobbs Mfg. Co., Bridgeport, Conn.

Patent Solicitors.
 Fitzgerald, S. C., Washington, D. C.
 Brown & Howson, Phila. & Washgton.
 Jenner, H. W. F., Washington, D. C.
 Stocking, E. B., Washington, D. C.

Perforated Metal.
 Clinton Wire Cloth Co., Clinton, Mass.
 Harrington & King Perforating Co., Chicago, Ill.
 Hendrick Mfg. Co., Ltd., Carbondale, Pa.

Phosphor Bronze.
 Phosphor Bronze Smelting Co., Limited, 512 Arch, Philadelphia.

Phosphor Tin.
 Crescent Phosphorized Metal Co., Philadelphia, Pa.
 Crosby Steam Gauge & Valve Co., Boston, Mass.
 Balk & Naumann, 516 Pearl, N. Y.

Picks and Mattocks.
 Plumb, Fayette R., Philadelphia, Pa.

Pig Iron.
 Houston, C. B. & Co., Philadelphia, Pa.
 Mann, Edwin R., Philadelphia, Pa.
 Montour Iron & Steel Co., Danville, Pa.
 Taylor & Co., 45 Wall, N. Y.
 Rickards, Brown & Co., Chicago, Ill.
 Pilling & Crane, Philadelphia, Pa.
 Samuel, Frank, Philadelphia, Pa.

Pig Iron Storage.
 Am. Pig Iron Storage Warehouse Co., 44 Wall, N. Y.

Pile Drivers.
 Vulcan Iron Wks., Chicago, Ill.

Pipe, Bent.
 National Pipe Bending Co., New Haven

Pipe Cutting and Threading Machines.
 Bignall & Keeler Mfg. Co., St. Louis, Mo.
 Merrill Mfg. Co., Toledo, O.
 Hancock Henry B. & Co., Philadelphia.
 Saunders' Sons, D., Yonkers, N. Y.

Pipe Grips.
 Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c., Makers of.
 McNab & Harlin Mfg. Co., N. Y.

Pipe, Water and Gas. Makers of.
 Cumberland Nail & Iron Co., Phila. Pa.
 Donaldson Iron Co., Emaus, Pa.
 Riverside Iron Works, Wheeling, W. Va.
 Wood, R. D. & Co., Philadelphia, Pa.

Plane Irons, Manufacturers of.
 Buck Bros., Milbury, Mass.

Planes, Manufacturers of.
 Stanley Rule & Level Co., N. Y.

Plate Bending Rolls.
 Schneekloth, H. A., 630 W. 28th St., N. Y.

Plate, Iron and Steel, Mfrs of.
 Anna-Standard Iron & Steel Co., Bridgeport, Ct.
 Vickers Iron & Steel Co., Coatesville, Pa.
 Mahoning Valley Iron Co., Youngstown, Ohio.
 Moorehead-McLean Co., Pittsburgh, Pa.
 McIlvain & Sons, Reading, Pa.
 Pottstown Iron Co., Pottstown, Pa.
 Pottsville Iron & Steel Co., Pottsville, Pa.
 Singer, Nimick & Co., Pittsburgh, Pa.
 The Mahoning Valley Iron Co., Youngstown, O.
 Wellman Iron & Steel Co., Thurlow, Pa.
 Woodman Co., Philadelphia.

Plating, Nickel, Brass and Silver.

Wilnot & Hobbs Mfg. Co., Bridgeport, Conn.

Plumbago.
 Chicago Fdy. Supply Co., Chicago, Ill.

Pokers and Lifters.
 Troy Nickel Works, Troy, N. Y.

Polishing Machines.
 Watson & Stillman, 204 E. 43d, N. Y.

Polishing Wheel.
 La Massena, C. E. & Co., Newark, N. J.

Post Hole Diggers.
 Kohler, F. E. & Co., Canton, O.
 Wister, L. R. & Co., Philadelphia, Pa.

Poultry Nettings.
 Barnum, E. T., Detroit, Mich.
 Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
 N. Y. Wire Cloth Co., Trenton, N. J.
 "Silver Finish."
 Tyler Wire Wks. Co., W. S., Cleveland, O.
 Wright & Colton Wire Cloth Co., Worcester, Mass.

Power.
 Ladin & Rand Powder Co., 29 Murray New York Powder Co., 62 Liberty St., N. Y.

Power Hack Saws.
 Millers Falls Co., 93 Reade St., N. Y.

Power Hammers.
 Selden Mach. Co., New Haven, Conn.
 Gannett & Eberhardt, Philadelphia.
 Dupont Mfg. Co., St. Johnsbury, Vt.
 Jenkins & Lingie, Bellefonte, Pa.

Presses, Dies, &c.
 E. W. Bliss Co., Brooklyn, N. Y.
 Crosby, G. A. & Co., Chicago, Ill.
 Stark Mch. & Tool Co., Buffalo, N. Y.
 Stiles & Parker Press Co., Brooklyn, N. Y.
 Waterbury Mch. Co., Waterbury, Conn.

Presses, Power, Makers of.
 Bliss, E. W. Co., Brooklyn, N. Y.
 Manville, E. J. Mch. Co., Waterbury, Ct.
 Merriman, A. H., Meriden.
 Stark Mch. & Tool Co., Buffalo, N. Y.
 Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

Pulleys.
 Keystone Clutch, Mch. Wks., Phila., Pa.

Pulverizing Mill.
 Bradley Fertilizer Co., Boston, Mass.

Pumping Machinery.
 Coulter & McKenzie Mch. Co., Bridgeport, Conn.
 Dean Bros. Steam Pump Works, Indianapolis, Ind.
 Hooker-Colville Steam Pump Co., Chicago, Ill.
 McCowan, J. H. & Co., Cincinnati, O.
 Maslin, J. & Son, Jersey City, N. J.
 Norwalk Iron Wks. Co., So. Norwalk, Conn.
 Southwark Fdy. & Mch. Co., Phila. Pa.
 Valley Pump Wks. Easthampton, Mass.
 Worthington, Henry R., 86 & 88 Liberty St., N. Y.

Pumps, Makers of.
 Bellevue Pump Co., Bellevue, Iowa.
 Deming Co., Salem, O.
 Douglas, W. & B., Middletown, Conn.
 Mast, Foss & Co., Springfield, O.
 Myers, F. E. & Bro., Ashland, O.

Punches and Shears, Hand and Power.
 E. W. Bliss Co., Brooklyn, N. Y.
 Cockburn Barrow & Mch. Co., Jersey City, N. J.
 Crosby, G. A. & Co., Chicago, Ill.
 Hender, J. A., Wilmington, Del.
 Schneekloth, H. A., 630 W. 28th St., N. Y.
 Stark Mch. & Tool Co., Buffalo, N. Y.
 Stiles & Parker Press Co., Brooklyn, N. Y.
 Wals & Roos, Punch & Shear Co., Cincinnati, Ohio.
 Waterbury Farrel Foundry and Mch. Co., Waterbury, Conn.
 Watson & Stillman, 204 E. 43d, N. Y.

Rails, Old and New.
 Perry, W. H. & Co., Providence, R. I.
 Schwarzenberg Bros. & Co., Cleveland, O.

Rat and Mouse Traps.
 Burditt & Williams, Boston, Mass.
 Estey, W. S., 65 Fulton, N. Y.
 Ripley Mfg. Co., Unionville, Conn.

Razors.
 Butcher, W. & S., 135 Duane St., N. Y.
 Curley, J. & Bro., 6 Warren St., N. Y.
 Electric Cutlery Co., 113 Chambers, N. Y.
 Schmitz, E. Lothar, 92 Reade St., N. Y.
 J. Torrey Razor Co., Worcester, Mass.

Reels.
 Hendryx, A. B. Co., New Haven, Conn.

Refrigerator Door Fasteners.
 Conroy, P. J. & Co., Philadelphia.

Rivets.
 Blake & Johnson, Waterbury, Conn.
 Boyce Rivet Co., Muncie, Ind.
 Burden Iron Co., Tr. y, N. Y.
 Cobb & Drew, Plymouth, Mass.
 Henderson, Jas. S., 165 Greenwich, N. Y.
 Plymouth Mills, Plymouth, Mass.
 Sternberg, J. H. & Son, Reading, Pa.
 Townsend, W. P. & Co., New Brighton, Pa.

Riveting Machines.
 Adt, Jno. & Sons, New Haven, Conn.

Rock Drills.
 Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.
 Rand Drill Co., 23 Park Place, N. Y.

Rolling Mill Machinery

Birmingham Iron Fdry, Birmingham, Conn.
 Booth, The Lloyd Co., Youngstown, O.
 Leechburg Foundry & Mch. Co., Pittsburgh, Pa.
 Mahoning Fdry & Mch. Co., Danville, Pa.
 Morgan Construction Co., Worcester, Mass.
 Robinson-Rea Mfg. Co., Pittsburgh.
 Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.
 Trethewey Mfg. Co., Pittsburgh, Pa.
 Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.

Roll Lathes.
 Totten & Hogg Iron & Steel Fdry Co., Pittsburgh, Pa.

Rolls, Chilled, Sand and Steel.
 Booth, The Lloyd Co., Youngstown, O.
 Garrison, A. Fdry Co., Pittsburgh, Pa.
 Johnson Foundry Co., Johnstown, Pa.
 Seaman, Sneath & Black, Pittsburgh.
 Totten & Hogg Iron and Steel Fdry Co., Pittsburgh, Pa.

Roofing.
 Berlin Iron Bridge Co., E. Berlin, Conn.
 Boston Bridge Works, Boston, Mass.
 Cambridge Roofing Co., Cambridge, O.
 Cincinnati Corrugating Co., Piqua, O.
 Johns, H. W. Mfg. Co., 87 Maiden Lane

Rope and Web Goods.
 Covert Mfg. Co., West Troy, N. Y.
 Covert's Saddlery Wks., Farmer, N. Y.

Rope Wheels.
 Cresson, Geo. V. Co., Philadelphia, Pa.

Rubber Goods.
 Canfield, H. O., Bridgeport, Conn.

Rules, Manufacturers of.
 Keuffel & Esser Co., 127 Fulton St., N. Y.
 Lukin Rule Co., Saginaw, Mich.
 Standard Tool Co., Athol, Mass.
 Stanley Rule & Level Co., 29 Chambers.

Sand Paper.
 Baeder, Adamson & Co., Phila., Pa.

Sash Balances.
 Caldwell Mfg. Co., Rochester, N. Y.
 Pullman Sash Balance Co., Rochester, N. Y.
 Stewart & Baker, Rochester, N. Y.
 Vanderbilt Sash Balance Co., Canandaigua, N. Y.

Sash Cords and Chains.
 Morton, Thos., 65 Elizabeth, N. Y.
 Ossawan Mills Co., Norwich, Conn.
 Samson Cordage Works, Boston, Mass.
 Smith & Egge, Mfg. Co., Bridgeport, Cincinnati Corrugating Co., Piqua, O.

Sash Locks.
 Ives, H. B. & Co., New Haven, Conn.

Sash Pulleys.
 Empire Portable Forge Co., Lansingburgh, N. Y.
 Palmer Hardware Mfg. Co., Troy, N. Y.

Sash Pulley Marker.
 Skelly J. W. & Son, Bristol, Conn.

Sash Weights.
 Brown, E. E. & Co., Philadelphia, Pa.

Sash Weight Fasteners.
 Skelly, J. W. & Son, Bristol, Conn.

Saws, Makers of.
 Diston, Henry & Sons, Phila., Pa.
 Hiles, C. A. & Co., 338-338 Carroll Ave, Chicago, Ill.
 National Saw Co., 96 Reade St., N. Y.
 Simonds Mfg. Co., Fitchburg, Mass.

Saw Sets.
 Kohler, F. E. & Co., Canton, Ohio.
 Taintor Mfg. Co., 84-86 Chambers, N. Y.

Scales, Manufacturers of.
 Buffalo Scale Co., Buffalo, N. Y.
 Chadillon, John & Sons, 85-89 Cliff, N. Y.

Scrapers, Road.
 Am. Steel Scraper Co., Sidney, Ohio.
 Kilbourne & Jacobs Mfg. Co., Columbus, O.
 Sidney Steel Scraper Co., Sidney, O.

Screens, Door and Window.
 Queen Anne Screen Co., Burlington, Vt.

Screw Cutting Machinery.
 Wells Bros. & Co., Greenfield, Mass.
 Wiley & Russell Mfg. Co., Greenfield, Mass.

Screw Drivers.
 Brown, R. H. & Co., New Haven, Conn.
 Capitol Mfg. Co., Chicago, Ill.
 Chantrell Tool Co., Reading, Pa.
 Mayhew, H. H. Co., Shelburne Falls, Mass.

Screw Plate and Pipe Cutter.
 Jarecki Mfg. Co., Erie, Pa.

Screws, Makers of.
 American Screw Co., Providence, R. I.
 Blake & Johnson, Waterbury, Conn.
 Wm. H. Haskell Co., Pawtucket, Miles, F. S., 205 Quarry, Philadelphia.
 National Screw & Tack Co., Cleveland, Ohio.
 Reynolds & Co., New Haven, Conn.
 Worcester Machine Screw Co., Worcester, Mass.

Screw Saws.
 Barnes, W. F. & John, Rockford, Ill.
 Seneca Falls Mfg. Co., Seneca Falls, N. Y.

Seythe Stones and Whetstones.
 Pike Mfg. Co., Pike Station, N. H.
 Cleveland Stone Co., Cleveland, O.

Shafting, Makers of.
 Cresson, Geo. V. Co., Philadelphia, Pa.
 Fairmount Mch. Co., Philadelphia, Pa.
 Fitzsimons & Co., Cleveland, Ohio.
 Sellers, Wm. & Co., Inc., Phila. Pa.
 Stow Mfg. Co., Binghamton, N. Y.

Shaped Iron and Steel, Manufacturers of.
 Anna-Standard Iron & Steel Co., Bridgeport, O.

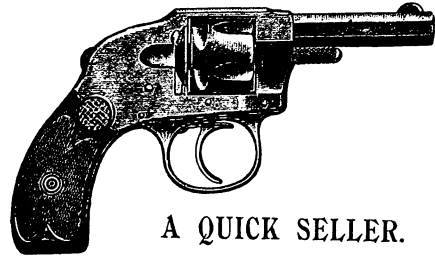
- Allentown Rolling Mill.** Allentown, Pa.
Illinois Steel Co., Chicago, Ill.
Lockhart Iron & Steel Co., Pittsburg, Pa.
Passaic Rolling Mill Co., Paterson, N.J.
Pottsville Iron & Steel Co., Pottsville, Pa.
Reberts, A. & P. Co., Phila., Pa.
The Phoenix Iron Co., Phila., Pa.
Tudor Iron Works, St. Louis, Mo.
- Shears and Scissors.**
Acme Shear Co., Bridgeport, Conn.
Heinrichs, R. Sons Co., Newark, N. J.
- Sheet Iron and Steel, Manufacturers of.**
Atna-Standard Iron and Steel Co., Bridgeport, C.
Cambridge Iron & Steel Co., Cambridge, Ohio.
Chess Bros., Pittsburgh, Pa.
Mahoning Valley Iron Co., Livingston, Ohio.
Moorehead-McCleane Co., Pittsburgh, Pa.
Peterson & Co., 29 Broadway, N. Y.
Reilly, John W., Fort Hunter P. O., Pa.
Singer, Nimick & Co., Ltd., Pittsburgh, Pa.
The Mahoning Valley Iron Co., Youngstown, O.
Alan Wood Co., Philadelphia.
W. Dewees Wood Co., McKeesport, Pa.
- Sheet Metal Work.**
Clark & Cowles, Plainville, Conn.
- Sheet Zinc.**
Mathiessen & Hegeler Zinc Co., La Salle, Ill.
- Shelf Brackets.**
Koch, A. B. & Co., Peoria, Ill.
- Shovels, Spades and Scoops.**
Myers, H. M. Co., Beaver Falls, Pa.
- Sinks.**
Douglas, W. & B., Middletown, Conn.
- Skates, Ice.**
Dame, Stoddard & Kendall, Boston, Mass.
Winslow, Sam'l, Skate Mfg. Co., Worcester, Mass.
- Skates, Roller.**
Henley, M. O., Richmond, Ind.
Winslow, Sam'l, Skate Mfg. Co., Worcester, Mass.
- Smelting Works.**
Reeves, Paul S., 760 S. Broad, Phila.
- Speaking Tubes.**
Ostrander, W. R. & Co., 204 Fulton St., N. Y.
Wollensak, J. F., Chicago, Ill.
- Specialties, Pat. Articles.**
Konigslow, O., Cleveland, O.
- Speed Indicators.**
Church & Slight, 109 Fulton St., N. Y.
- Spelter.**
Mathiessen & Hegeler Zinc Co., La Salle, Ill.
- Spoons and Forks.**
Holmes & Edwards Silver Co., Bridgeport, Conn.
Rogers, The Wm. Mfg. Co., Hartford, Conn.
- Sporting Goods.**
Hardley & Graham, 313-315 E'way, N.Y.
- Spring.**
American Spiral Spring Co., Pittsburgh, Pa.
Cary, Alanson, 240-242 W. 29th St., N.Y.
Dunbar Bros., Bristol, Conn.
Miller & Van Winkle, Brooklyn, N. Y.
Morgan Spring Co., Worcester, Mass.
Nourse, Fred. Co., 315 to 319 E. 22d St., N. Y.
Roland, Wm. & Harvey, Phila., Pa.
Sabin Machine Co., Montpelier, Vt.
Washburn & Moen Mfg. Co., Worcester, Mass.
Wolf, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
- Spring Hinges.**
Bardley, J., 149 & 151 Baxter St., N.Y.
Chicago Spring Butt Co., Chicago, Ill.
Fulman Sash Balance Co., Rochester, N. Y.
Bover Mfg. Co., Freeport, Ill.
Van Wagoner & Williams Co., 14 Warren St., N. Y.
- Spring Keys and Cotter's.**
Whitman & Barnes Mfg. Co., Syracuse, N. Y.
- Sprinklers.**
Smith, Oliver A., Clarkston, Mich.
- Stamped Ware.**
Am. Stamping Co., 104 & 106 John St., New York
- Stamping Works.**
Cleveland Stamping & Tool Co., Cleveland, O.
- Staples.**
Cobb & Drew, Plymouth, Mass.
Titchener E. H. & Co., Binghamton, N.Y.
- Steam Ganges.**
Ashcroft Mfg. Co., 111 Liberty St., N.Y.
Bristols Mfg. Co., Waterbury, Conn.
- Steam Hammers, &c., Makers of.**
Dienelt & Eisenhardt, Philadelphia, Pa.
Dudgeon, Richard, 24 Columbia Street, N. Y.
Trethewey Mfg. Co., Pittsburgh, Pa.
- Steam Heating.**
Webster Warren & Co., Camden, N.J.
- Steam Separators.**
Goubert Mfg. Co., 32 Cortland St., N. Y.
Harrison Safety Boiler Wks., Phila. Pa.
- Steel Balls.**
Grant Anti-Friction Ball Co., Fitchburg, Mass.
- Steel, Cold Rolled Strip.**
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Steel Figures and Alphabets.**
Ziegler, W., 61 Fulton, N. Y.
- Steel Importers.**
Abbott, Jere & Co., N. Y. and Boston.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Milne, A. & Co., 1 Broadway, N. Y.
Newton & Shipman, 83 John, N. Y.
Wetherell Bros., 93 Liberty St., N. Y.
Whitney, A. R. & Co., B'way, N. Y.
Wolf, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.
- Steel (Mushet's Special).**
Jones, B. M. & Co., Boston.
- Steel Manufacturers.**
Atna-Standard Iron & Steel Co., Bridgeport, .
Bethlehem Iron Co., S. Bethlehem, Pa.
Baker, Herman & Co., 103 Duane St.
Carbon Steel Co., Pittsburgh, Pa.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Eiken & Co., Hagen, Germany.
Frankford Steel Co., Philadelphia.
Gaulter Steel Department of Cambria Iron Co., Johnstown, Pa.
Hobson, Francis, Seaman & Co., 97 John St., N. Y.
Illinois Steel Co., Chicago, Ill.
Jessop, Wm. & Sons, Sheffield, England, or 91 John, N. Y.
Kayser, Ellison & Co., Sheffield, Eng.
La Belle Steel Co., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Moorhead-McCleane Co., Pittsburgh, Pa.
Moss, F. W., 83 John, N. Y.
Naylor & Co., 45 Wall, N. Y.
Pottsville Iron and Steel Co., Pottsville, Pa.
Reddy, J. W., Fort Hunter P. O., Pa.
Rowland, Wm. & Harvey, Frankford Philadelphia.
Singer, Nimick & Co., Pittsburgh.
Stanley Works, New Britain, Conn.
Steel & Iron Improvement Co., Pittsburgh, Pa.
Taylor Iron & Steel Co., High Bridge, N.J.
Wordlaw, S. C., Sheffield, Eng.
Wetherell Bros., 93 Liberty, N. Y.
Wilmot & Hobbs Mfg. Co., Bridgeport Conn
- Steel, Manufacturers' Agents.**
Barnes, C. K. & Co., Philadelphia, Pa.
Corning, Edw. & Co., 29 B'way, N. Y.
Lindsay, Jas. G. & Co., Phila., Pa.
Peterson & Co., 29 Broadway, N. Y.
- Steel Rails, Manufacturers of.**
Bethlehem Iron Co., S. Bethlehem, Pa.
Cambria Iron Co., Johnstown, Pa.
Illinois Steel Co., Chicago, Ill.
Montour Iron & Steel Co., Danville, Pa.
Riverside Iron Wks., Wheeling, W. Va.
- Steel, Tool.**
Frankford Steel Co., Philadelphia, Pa.
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.
- Step Ladders.**
Bicycle Step Ladder Co., Chicago, Ill.
Croissant, M., Albany, N. Y.
- Stocks and Dies.**
Armstrong Mfg. Co., Bridgeport, Conn.
Billings & Spencer Co., Hartford, Conn.
Butterfield & Co., Derby Line, Vt.
Hart Mfg. Co., Cleveland, O.
Saunders' Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Stone Linings.**
Ostrander Fire Brick Co., Troy, N. Y.
- Stone Pipe Thimbles.**
Cheney, S. & Son, Manlius, N. Y.
- Stone Trimmings.**
Troy Nickel Works, Troy, N. Y.
- Street Lamps.**
Dietz, R. E., Co., 60 Lighthouse St., N. Y.
Steam Gauge & Lantern Co., Syracuse, N. Y.
- Strops.**
Electric Cutlery Co., 113 Chambers, N.Y.
J. R. Torrey & Co., Worcester, Mass.
- Stripping Machines.**
Schmitz, E. Lothar, 92 Reade St., N. Y.
- Structural Iron Work.**
Berlin Iron Bridge Co., East Berlin, Conn.
Boston Bridge Wks., Boston, Mass.
Lindsay, Jas. G. & Co., Phila., Pa.
Wrought Iron Bridge Co., Canton, O.
- Sulphuric Acid.**
Mathiessen & Hegeler Zinc Co., La Salle, Ill.
- Tacks, Brads, Staples, &c.**
Atlas Tack Corporation, Boston, Mass.
Cobb & Drew, Plymouth, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Nat. Screw & Tack Co., Cleveland O.
Phillips, E. & Sons, South Hanover.
Plymouth Mills, Plymouth, Mass.
Trufant, W. E., Whitman, Mass.
- Taps and Dies.**
Eutterfield & Co., Derby Line, Vt.
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.
Manning, Maxwell & Moore, 111 Liberty, St., N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Testing Laboratories.**
Riehle Bros. Testing Mch. Co., Philadelphia.
- Testing Machines.**
Riehle Bros. Testing Mch. Co., Phila.
- Theatrical Hardware.**
Wollensak, J. F., Chicago, Ill.
- Thill Springs.**
Frost Thill Spring Co., Boston, Mass.
Sabin Machine Co., Montpelier, Vt.
- Time Record.**
Scattergood, H. W., Phila., Pa.
- Tinners' Hardware.**
Berger Bros., Philadelphia, Pa.
- Tin Plate Machinery.**
Lloyd Booth Co., Youngtown, Ohio.
- Tinware.**
Am. Stamping Co., 104 & 106 John St., N. Y.
- Tire Upsetters.**
Butts & Ordway, Boston, Mass.
- Toe Chalks, Steel.**
Burke, P. F., Boston, Mass.
- Tool Chests.**
Am. Tool Co., 200 W. Houston St., N.Y.
- Tools.**
Britton, Horace E., Stoughton, Mass.
Brown, R. H. & Co., New Haven, Conn.
Chamrell Tool Co., Reading, Pa.
Frasse Co., 19 Warren St., New York.
Mayhew, H. H. Co., Shelburne Falls, Mass.
Millers Falls Co., 93 Reade, N. Y.
Richardson, C. F. & Son, Athol, Mass.
Standard Tool Co., Athol, Mass.
Stanley Rule & Level Co., 29 Chambers, Starrett, L. S., Athol, Mass.
- Tools, Blacksmith and Wheelwrights.**
Buffalo Forge Co., Buffalo, N. Y.
Butts & Ordway, Boston, Mass.
Champion Blower & Forge Co., Lancaster, Mass.
Plumb, Fayette R., Philadelphia, Pa.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Tools, Steam and Gas Fitters'.**
Saunders' Sons, D., Yonkers, N. Y.
- Torches, Oil and Gasolene.**
Dangler Stove & Mfg. Co., Cleveland, O.
Schneider & Trenkamp Co., Cleveland, Ohio.
Standard Lighting Co., Cleveland, O.
- Transom Lifters.**
Wollensak, J. F., Chicago, Ill.
- Trucks, Manufacturers of.**
Berger Bros., Philadelphia, Pa.
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
Clark, G. P., Windsor Locks, Conn.
Lansing Wheelbarrow Co., Lansing, Mich.
- Tubes, Seamless Drawn Copper.**
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.
Randolph & Clowes, Waterbury, Conn.
- Tubes, Steel.**
Leng's John S. Son & Co., 4 Fletcher St., New York.
Mannesmann Tube Co. Ltd., Landore, England.
- Tumbling Barrels.**
Henderson Bros., Waterbury, Conn.
- Turnbuckles.**
Cleveland City Forge & Iron Co., Cleveland, O.
Merrill Bros., Brooklyn, E. D.
- Twist Drills, Makers of.**
Cleveland Twist Drill Co., Cleveland.
Mont Twist Drill & Machine Co., New Bedford, Mass.
New Process Twist Drill Co., Taunton, Mass.
Standard Tool Co., Cleveland.
- Valves, Gas, Water and Steam.**
Best, Fox & Co., Pittsburgh, Pa.
Chapman Valve Mfg. Co., Boston.
Eynon-Evans Mfg. Co., Philadelphia, Pa.
Jenkins Bros., 71 John, N. Y.
McNab & Harlin Mfg. Co., 56 John N. Y.
Mason Regulator Co., Boston, Mass.
- Ventilator Appliances.**
Howard & Morse, 45 Fulton, N. Y.
- Vise Jaws.**
Newark Mch. Tool Co., Newark, N. J.
- Vises.**
Capital Mch. Tool Co., Auburn, N. Y.
Hollands Mfg. Co., Erie, Pa.
Howard Iron Works, Buffalo, N. Y.
Millers Falls Co., 93 Reade St., N. Y.
Prentiss Vise Co., 44 Barclay, N. Y.
Van Wagoner & Williams Co., 14 Warren St., N. Y.
- Wagon Jacks.**
Boston & Lockport Block Co., Boston, Mass., and Lockport, N. Y.
Covert Mfg. Co., West Troy, N. Y.
Covert's Saddlery Works, Farmer, N. Y.
- Washers.**
Haskell, Wm. H. Co., Pawtucket, R. I.
Milton Mfg. Co., Milton, Pa.
Sternbergh, J. H. & Son, Reading, Pa.
- Water Meters.**
Worthington, Henry R., 86 & 88 Liberty St., N. Y.
- Water Wheels.**
Poole, Robt. & Son Co., Baltimore, Md.
- Well Machinery.**
Amer. Well Works, Aurora, Ill.
- Wheelbarrows.**
Akron Tool Co., Akron, O.
Amer. Steel Scraper Co., Sidney, Ohio.
Cockburn Barrow & Mch. Co., Jersey City, N. J.
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.
- Lansing Wheelbarrow Co.,** Lansing, Mich.
Sidney Steel Scraper Co., Sidney, O.
Sweatt Mfg. Co., Minneapolis, Minn.
- Whips.**
American Whip Co., Westfield, Mass.
- Window Cord, Makers of.**
Samson Cordage Works, Boston, Mass.
- Wire, Manufacturers of.**
Amer. Spiral Spring Co., Pittsburgh, Pa.
Consolidated Steel & Wire Co., St. Louis, Mo.
Gaulter Steel Department of Cambria Iron Co., Johnstown, Pa.
Miller & Van Winkle, Brooklyn, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
New Haven Wire Mfg. Co., New Haven, Conn.
Salem Wire Nail Co., Salem, N. J.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester, Mass.
Wetherell Bros., 93 Liberty St., F. Y.
Wolf, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
- Wire Cloth.**
Barnum, E. T., Detroit, Mich.
Clinton Wire Cloth Co., Clinton, Mass.
Darby, Edward & Sons, Philadelphia.
Estey, W. S., 65 Fulton, N. Y.
Gilbert & Bennett Mfg. Co., 42 Cliff.
Howard & Morse, 45 Fulton, N. Y.
N. J. Wire Cloth Co., Trenton, N. J.
Reliance Wire & Iron Wks., Milwaukee, Wis.
Scheeler & Sons, Buffalo, N. Y.
Wickwire Bros., Cortland, N. Y.
Wright & Colton Wire Cloth Co., Worcester, Mass.
W. S. Tyler Wire Works Co., Cleve'd.
- Wire Cutters.**
Higginum Hdw. Co., Higganum, Conn.
King, J. M. & Co., Watertown, N. Y.
- Wire Dies.**
McFarland, Wm., Trenton, N. J.
Newton & Shipman, 83 John, N. Y.
- Wire Door Mats.**
Hartman Mfg. Co., Elwood City, Pa.
Horrook, Joshua, 45 Cliff St., N. Y.
The Wire Goods Co., Worcester, Mass.
White Mfg. Co., Minneapolis, Minn.
- Wire Fences.—See Fencing, Iron and Wire.**
- Wire Goods, Manufacturers of.**
Darby, Edward & Sons, Phila.
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.
Ludlow-Saylor Wire Co., St. Louis.
Ossavan Mills Co., Norwich, Conn.
Scheeler & Sons, Buffalo, N. Y.
Whitman & Barnes Mfg. Co., Syracuse, N. Y.
Wire Goods Co., Worcester, Mass.
Wickwire Bros., Cortland, N. Y.
Williamson, C. T. Wire Novelty Co., Newark, N. J.
- Wire Machinery.**
Am. Tool Wks., Cleveland, O.
Manville, E. J. Mch. Co., Waterbury, Ct.
Morgan Construction Co., Worcester, Mass.
Waterbury Mch. Co., Waterbury, Conn.
- Wire Straightening and Outting Machinery.**
Adt, John & Son, New Haven, Conn.
- Wire Nails.**
Consolidated Steel & Wire Co., St. Louis, Mo.
Indiana Wire Fence Co., Crawfordsville, Ind.
Kilmer Mfg. Co., Newburg, N. Y.
New Castle Wire Nail Co., New Castle, Pa.
Phillips, E. & Sons, South Hanover, Mass.
Phillips, Townsend & Co., Phila., Pa.
Plymouth & Sons Rope Co., St. Louis.
Salem Wire Nail Co., Salem, O.
Taunton Wire Nail Co., Taunton, Mass.
Whitney, A. R. & Co., New York, N. Y.
- Wire Rods, Steel.**
Consolidated Steel & Wire Co., St. Louis, Mo.
Illinois Steel Co., Chicago, Ill.
New Castle Wire Nail Co., New Castle, Pa.
Washburn & Moen Mfg. Co., Worcester, Mass.
Whitney, A. R. & Co., 17 B'way, N. Y.
Wolf, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.
- Wire Rope, Iron and Steel Makers.**
Broderick & Bascom Rope Co., St. Louis, Mo.
California Wire Works, San Francisco.
Hasard Mfg. Co., Wilkesbarre, Pa.
A. Leschen & Sons Rope Co., St. Louis.
Trenton Iron Co., Trenton, N. J.
Washburn & Moen Mfg. Co., Worcester, Mass.
Williamsport Wire Rope Co., Williamsport, Pa.
- Wood-Working Machinery.**
Seneca Falls Mfg. Co., Seneca Falls, N.Y.
- Wrenches, Manufacturers of.**
Bemis & Cail Hardware & Tool Co., Springfield, Mass.
Billings, Spencer & Co., Hartford, Conn.
Capitol Mfg. Co., Chicago, Ill.
Central Iron & Steel Co., Brazil, Ind.
Coes Wrench Co., Worcester, Mass.
Keystone Mfg. Co., Buffalo, N. Y.
Plymouth Wrench Co., Boston, Mass.
Trimont Mfg. Co., Roxbury, Mass.
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Aschman Steel Casting Co.....	27	Capitol Mfg. Co.....	91	Duffy, J. A.....	58	Hiles, C. A. & Co.....	68
Ashcroft Mfg. Co.....	36	Carbon Steel Co.....	21	Dunbar Bros.....	5	Hillebrand & Wolf.....	47
Atlas Mfg. Co.....	77	Carlin's Sons, Thomas.....	58	Dunham Nut Machine Co.....	55	Hill, Clarke & Co.....	57
Atlas Tack Corporation.....	11	Carpenter, J. M. Tap & Die Co.....	103	Dupont Mfg. Co.....	42	Hobson, F., Seaman & Co.....	19
Babcock & Wilcox Co.....	37	Carten, Henry J.....	31	Durant, W. N.....	35	Hoffman, C. & A.....	76
Baeder, Adamsen & Co.....	64	Cary, Alanson.....	5	Dwight Slate Machine Co.....	44	Hoffman, J. W. & Co.....	18
Banker & White.....	70	Chadborne & Coldwell Mfg. Co.....	95	Eagle Anvil Works.....	71	Hogan, John L. & Co.....	18
Bardsley, J.....	82	Chambers Bros. Co.....	96	Eccles, Richard.....	86	Hollands Mfg. Co.....	67
Barnes, C. K. & Co.....	22	Champion Blower & Forge Co.....	49	Eddy Electric Mfg. Co.....	32	Holmes, Booth & Haydens.....	2
Barnes, W. F. & John.....	43	Champion Iron Co.....	9	Edge Moor Iron Co.....	28	Holmes & Edwards Silver Co.....	75
Barnett, G. & H.....	71	Chantrell Tool Co.....	64	Eiken & Co.....	20	Holt, Hiram & Co.....	95
Barnum, E. T.....	9	Chapman Mfg. Co.....	104	Electric Cutlery Co.....	74	Horrock, Joshua.....	10
Bass Foundry & Machine Works.....	35	Chapman Valve Mfg. Co.....	32	Emory, P. P. Mfg. Co.....	9	Hotchkiss, E. S.....	81
Belden Machine Co.....	43	Chatillon, John & Sons.....	80	Empire Portable Forge Co.....	85	Houston, C. B. & Co.....	18
Bell, Geo. E.....	54	Cheney, S. & Son.....	25	Enterprise Mfg. Co. of Pa.....	82	Howard Iron Works.....	90
Bellevue Pump Co.....	67	Chess Bros.....	25	Erie Engine Works.....	37	Howard & Morse.....	7
Bement, Miles & Co.....	45	Chester Steel Casting Co.....	26	Erie Engine Works.....	37	Howson & Howson.....	6
Bemis & Call Hardware & Tool Co.....	90	Chicago Foundry Supply Co.....	29	Estey, W. S.....	9	Hulbert Bros. & Co.....	103
Berger Bros.....	90	Chicago Spring Butt Co.....	78	Ette & Henger Mfg. Co.....	95	Hunt, Robert W. & Co.....	55
Berlin Iron Bridge Co.....	12	Chrome Steel Works.....	24	Etting, Edw. J.....	18&26	Hurley Bros.....	43
Best, Fox & Co.....	39	Church, Isaac.....	96	Eureka Cast Steel Co.....	104	Hussey, E. J. & Co.....	59
Bethlehem Iron Co.....	22	Church & Slight.....	35	Eynon-Evans Mfg. Co.....	33	Ideal Mfg. Co.....	77
Bevin Bros. Mfg. Co.....	76	Cincinnati Corrugat's Co.....	7	F. & N. Mfg. Co.....	94	Illinois Pure Aluminum Co.....	85
Bickford Drill & Tool Co.....	52	Cincinnati Milling Mch. Co.....	54	Fairmount Machine Co.....	53	Illinois Steel Co.....	3
Bicycle Step Ladder Co.....	83	Claffen Mfg. Co.....	40	Fearing, Wm. S.....	2	Indiana Wire Fence Co.....	21
Bigelow, C. R.....	57	Clapp, Geo. M.....	57	Ferdinand, L. W. & Co.....	77	Ingersoll Milling Machine Co.....	46
Bignall & Keeler Mfg. Co.....	46	Clark, G. P.....	98	Field, Alfred & Co.....	72	Ives, H. B. & Co.....	90
Billings & Spencer Co.....	90	Clark & Cowles.....	6	Fitch, W. & E. T.....	103	Jacobus, W. H.....	96
Billington, J. H. & Co.....	33	Cleveland Block Co.....	86	Fitchburg Machine Works.....	45	Jarecki Mfg. Co.....	44
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Blake & Johnson.....	13	Cleveland Stone Co.....	53	Foos Mfg. Co.....	92	Jenner, H. W. T.....	6
Bliss Co., E. W.....	41	Cleveland Twist Drill Co.....	50	Forehand Arms Co.....	79	Jessop, Wm. & Sons.....	19
Boardman, L. & Son.....	76	Clinton Wire Cloth Co.....	8	Fraim, E. T.....	84	Johns, H. W. Mfg. Co.....	16
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Booth, The Lloyd Co.....	28	Coes Wrench Co.....	91	Fulton Iron & Engine Works.....	52	Johnson, S. C.....	82
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Borgner, Cyrus.....	28	Colburn, A. M.....	49	Garrison, A., Foundry Co.....	25	Jones, Jesse & Co.....	85
Boston Bridge Works.....	16	Colby Wringer Co.....	83	Garry Iron & Steel Rfg. Co.....	10	Jones & Lamson Machine Co.....	62
Boston Gear Works.....	96	Coldwell Lawn Mower Co.....	94	Gartland Foundry Co.....	28	Kayser, Ellison & Co.....	19
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Boyce Rivet Co.....	104	Conroy, P. J. & Co.....	86	Gautier Steel Department.....	16	Kelley & Woolworth.....	72
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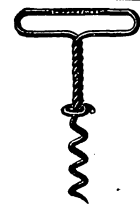
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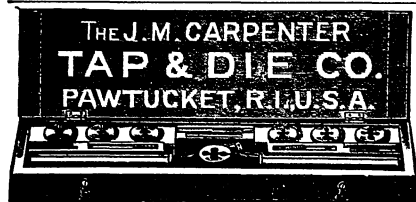
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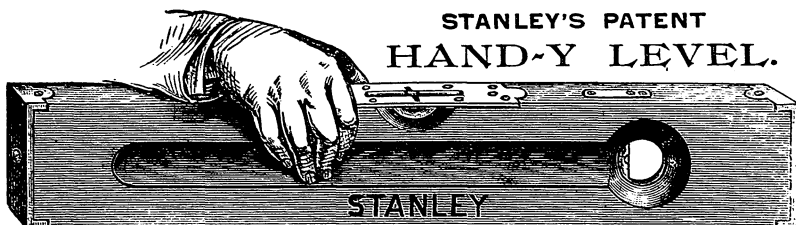
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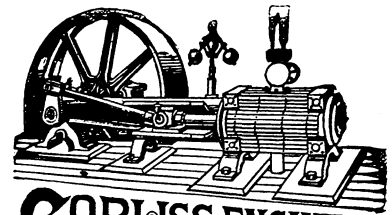


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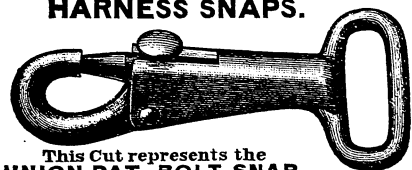
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See Page 64.

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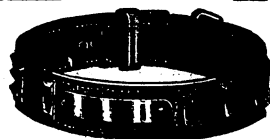
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THE IRON AGE

THURSDAY, AUGUST 31, 1893.

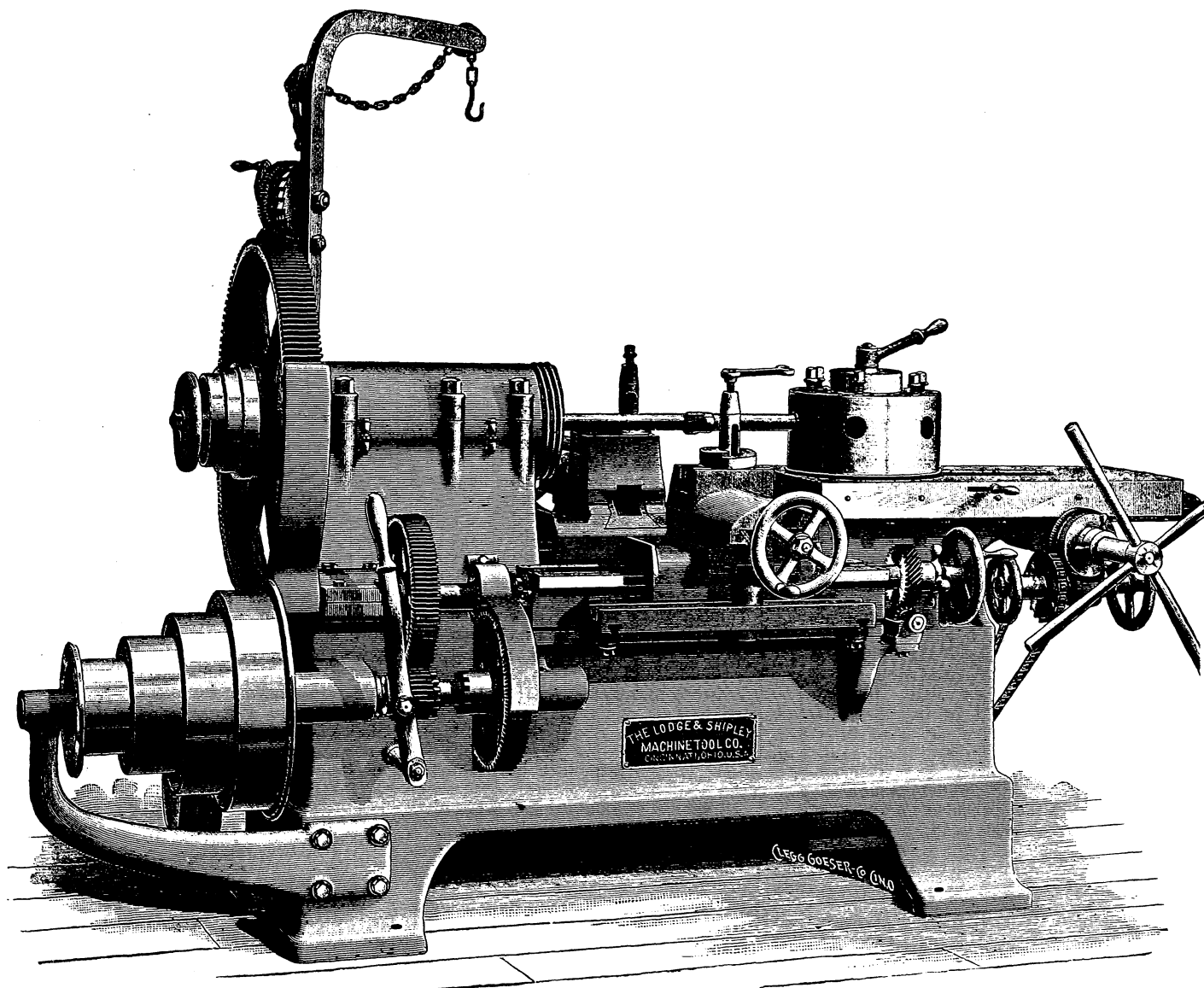
The Lodge & Shipley Turret Chucking Lathe

The 24-inch turret chucking lathe here illustrated has 24 inches swing, is 26 inches between head and foot stocks, and will turn down to the center. The machine was designed to occupy the same position with regard to cast-iron work that the screw machine does in

The ratio between driving shaft and spindle is two to one with back gear out, and 30 to 1 with back gear in, thus giving a range of eight speeds from 2 to 180 revolutions a minute. The gear on the head spindle is 30 inches in diameter, the spindle is 6 inches in diameter, with a $3\frac{1}{4}$ -inch hole through its entire length. The front end of this hole is bored tapering to receive a mandrel, cen-

The Improvements on the Lakes.

Gen. O. M. Poe, division engineer, United States Army, in charge of improvements on the northern lakes, and in direct charge of the work of the Sault canal and the 20-foot channel between Duluth and Buffalo, interviewed last week by a representative of *The Iron Age*, gave some interesting facts



THE LODGE & SHIPLEY TURRET CHUCKING LATHE.

its line. Blank gears, pulleys, fly wheels, drill press tables, and all parts of Corliss and slide valve engines requiring to be turned, bored and faced (the operations on this machine being simultaneous or separate at choice) may be gotten out rapidly and accurately. The entire frame is cast in one piece, including the head in which the spindle fits, the ways on which the carriages move and the foot stock. The power is taken from a $3\frac{1}{4}$ -inch belt, by a large four-step cone on the main driving shaft. The head spindle is driven from the main driving shaft by a train of six gears, which includes the back gear.

ter or bush. The nose of the spindle is $9\frac{1}{2}$ inches in diameter, and threaded to receive a chuck or face plate. On the back of the head stock is a swinging crane for handling work in or out of the lathe. The feeds are taken from the live spindle, on the same principle as on an engine lathe. The saddles are driven by means of screws in combination with bronze spiral gear, steel spiral and friction. The tool blocks are arranged for one or two tools. The weight of the machine, which is built by the Lodge & Shipley Machine Tool Company of Cincinnati, Ohio, is 4500 pounds.

as to lake commerce. The month of July, 1893, while it showed a decrease in the number of vessels passing into and out of Lake Superior, was the first month in the history of the canal when its freight business exceeded 2,000,000 tons, the total for the month being 2,007,000 tons. Almost entirely by reason of the increase in the average size of the vessels, this business was handled with less labor and in less time than was required three years ago to care for 1,000,000 tons a month. General Poe had not computed the average cargo tonnage, but stated that the records of all preceding years had been

broken during the month, as, for instance, 115,000 bushels of wheat, or 3480 tons, on the steamship "Selwyn Eddy" out of Duluth, 3500 tons of coal on the steamship "Curry" into Duluth, 3300 tons of iron ore on the steamship "Merida" out of Ashland. These three are the largest cargoes ever carried on Lake Superior, and it is notable in connection with the present low rates of freight that all three of these vessels are new this year. While the month showed a slight decrease in the great staples of iron ore and wheat this was more than made up by an increase in coal, nearly all of which traversed the entire chain of lakes from eastern Lake Erie to the head of Lake Superior at Duluth. Steamship companies who ordinarily ignored the coal trade, going up light for ore to save the time required for loading and unloading coal, were now glad of the 25 and 30 cent coal freight from Lake Erie to Duluth. While the iron ore tonnage at the canal to August 1 was but 14 per cent. less than in 1892, General Poe expects a large falling off later.

Work on the enormous new canal at the Sault Ste. Marie and the 20 foot channel project between Duluth and Buffalo is progressing favorably. The canal lock will be finished early in 1896 and the dredging of approaches that cannot be done till the lock is complete in the same year, so that the work will be ready for vessels that year. Contracts will be let in September for the gates of the lock, and over 1300 tons of steel will be used in these gates alone. The stone work of the lock will be done this fall. For the past two years there has been constant and imminent danger that vessels using the present canal would so damage the cofferdam of the new work as to flood it, causing large expense, and worse, to stop all use of the present canal until the break could be repaired. The near completion of the stone work of the new canal now obviates this danger. Had such a break occurred the loss to the marine interests would have been incalculable.

It has been stated that the new Canadian canal at the Sault would be ready for business next July. General Poe states this will be impossible; stone work is not so far advanced as at the American canal, nor is the cutting of the canal prism anywhere near done.

The 20-foot channel through all connecting waterways on the lakes will be ready for business when the canal is done. Already the vessels being built are with a view to loading to this depth, or about 4 feet deeper than they can now load.

At present all the shipyards of the lakes are idle, except that of the Globe Iron Works Company, at Cleveland, where 1400 men are at work on the two new passenger ships of the Great Northern line on the Buffalo Duluth route.

The *Journal des Mines* has published some interesting statistics of the world's coal fields. From these it appears that of the entire known coal area the United States has 58.7 per cent., and British America has 13.1 per cent., while England has but 2.8, and Spain, France, Germany and Belgium have together 1.9 per cent. The total production of coal in 1891 is estimated to have been 520,000,000 tons, of which 150,000,000 tons was produced in the United States.

The great fire which devastated South Chicago last week embraced in its area of destruction the dwellings of most of the employees of the Illinois Steel Company.

WORLD'S FAIR NOTES.

The Merrell Mfg. Company

of Toledo, Ohio, make an exhibit of their pipe-cutting and threading machinery in Machinery Hall, Section 13, Columns I and J, Nos. 40 and 41. Here they have installed specimens of their Nos. 12, 9½, 6, 4, 2 and 1 machines, all of which are shown in actual operation. The machines are specially designed to meet the wants of steam and gas fitters, erectors of heating, lighting and power plants, pipe-line service and general machine shops. The No. 12 machine is the largest they manufacture, and has a range from 2½ to 8 inch pipe inclusive. It is designed for heavy service, having a quick opening and closing die head, with a convenient cam movement and improved cutting-off knife. The cones are placed centrally over the machine, thus equalizing the weight and placing the belt in the most convenient position. Within the cones are compound gears which give six changes of speed. The vise is self-centering and feeds the pipe into the chasers by a friction universal lead screw connecting the vise frame to the die head by a cam closing the lead nut on the screw. A reverse movement of the cam releases the lead nut, or the pipe can be fed into the chasers by the hand wheel. The No. 9½ machine takes from 2½ to 8 inch pipe, is so arranged that either hand or power can be used at will, or the machine can be readily taken from its base and used as a hand machine. The No. 6 machine is a portable hand threading and cutting machine with an adjustable quick opening and closing die head and an improved cutting off knife. It takes from 1 to 6 inch pipe inclusive. With it one man can cut and thread a 6-inch pipe. It is operated either by a ratchet lever or a crank. The No. 5 is a hand machine taking from 1 to 4 inch pipe inclusive. The No. 2 is a hand or power machine, with a range from 1 to 4 inch pipe, and the No. 1 is also for hand or power, but covers a range of ½ to 2 inch pipe. These machines are specially noteworthy for their compactness, perfectly housed and journaled gears, their ability to cut true threads on uneven pipe, their great range of sizes with but one set of chasers, the convenience with which chasers can be changed for other sizes or from right to left, rapidity of cut off, and the positive feed to the chasers. The Wells Machine Works were formerly the manufacturers of these machines at Fostoria, but their business was recently purchased by the Merrell Mfg. Company.

Millers Falls Company

of Millers Falls, Mass., whose salesroom is at 93 Reade street, New York, have an exceedingly interesting exhibit in Machinery Hall, located in section 13, column I, No. 39. A showcase along the front of the space contains a variety of the small tools made by the company, such as small spirit levels, ratchet drills, Nos. 4 and 5 tool holders, hand vises, machinists' levels, four-faced spoke shaves, family tool chests, automatic drills, screw drivers, small miter boxes, small bit braces, soldering sets, &c. On a table in the rear are shown large miter boxes. Next comes a very large table, which is used for a display of vises, jack screws, drilling machines, &c. Among these vises are samples of the company's new mechanics' vise, with interchangeable jaws, a large steel-faced anvil and a seat which enables the vise

to be swung round for the use of files. Vises are also shown with side sockets to hold drills in place for operating on work held in the vise. The jack screws have ball-bearing heads, which is an excellent feature. In a large upright showcase in the extreme rear are specimens of large tools, such as butchers' saws, hack saws, scroll saws, ratchet drills, bit braces and large spirit levels. Blades for the butchers' saws are furnished so cheap that the user can afford to throw away a dull one instead of wasting time filing it sharp. The Star blade used in the hack saws have very rapidly displaced English blades in recent years, comparatively few being imported now, whereas the entire trade was in foreign hands but a few years since. The bit braces have a number of novel features, such as ball bearings in the head, anti-friction collars on the handle and a steel washer to take up the wear on the ratchet, all of which have been put on the tool without an advance in the old prices. Automatic drills are made with an assortment of drills in the handle, which is a convenience highly appreciated. A ratchet auger handle is shown, which is in high favor among bridge and car builders. It can be used as a ratchet or converted instantly into an ordinary auger handle, according to the character of the work to be done. Along the side of the space stands a row of small machines which are among the company's most popular products. In front is a power saw for sawing cold metal, which will cut a 5-inch angle bar with ease and hardly any waste of material. It can be set to work and needs no further attention, as it stops automatically on finishing the cut. It cuts perfectly square and without the use of oil. This machine is shown in operation on slotted work, cutting rails, sawing bars, &c. On light work it can be operated by a hand crane. Next comes an iron-frame grindstone, operated by a treadle, intended for use in small shops or by families. Then follow a number of specimens of foot-power lathes, each of which has a scroll-saw attachment, which can be quickly added or removed, leaving a lathe capable of quite a range of service. In interesting contrast with fine modern tools, the company exhibit a number of bit braces which were made from 100 to 50 years ago. They are constructed wholly of wood, the bit being held in its place by a wedge.

An estimate made by the London *Times* places the net loss experienced by the failure of crops this year in Great Britain, due to the prolonged drought, at not less than £2 per acre, or about \$336 000,000 on the spendable income of England. A further estimate of the losses for last year and this shows that the aggregate reduction in the income of farmers throughout the United Kingdom from crop failures alone comes to a little over \$504,000,000. This is a sufficiently serious state of things, and it is not to be wondered at that money is reported as scarce and trade as very bad in the agricultural districts.

Cable dispatches from England report that the scarcity of coal, caused by the great strike, is being keenly felt at British ports. Many steamships which have coaled regularly at London are now taking in their supplies at Continental ports, and it is likely that the Atlantic liners will be compelled to draw their fuel almost entirely from American sources.

The Curtis Steam Trap.

The accompanying illustrations show a new form of valve which is now used with the steam trap made by d'Este & Seeley Co. (formerly Curtis Regulator Co.), 29 Haverhill St., Boston, Mass. As will be seen from Fig. 1 the trap is made very heavy, of close grained cast iron, in

by removing the plate, which brings away with it the float and valve, so that it may be readily examined, repaired or shipped to the manufacturers, should this be necessary, but at the same time it leaves the pot in place and connected.

Looking at the sectional view, Fig. 2, it will be seen that the valve body is provided with strong ears, by means of

the trap is still some inches above the outlet. The valve holds tight, even when the end is quite worn, owing to the fact that the seat is a Jenkins and expansible. To remove the valve it is simply necessary to take out the small bolt in its center and draw out the valve with a hook. This valve may be easily turned up in a lathe, in a few moments the seat renewed and the valve made practically new without starting a gasket, bolt or pipe.

In order that the water may be drained off when the discharge valve is closed, and work continued, the trap is provided with an independent passage or by pass controlled by a stop valve.

The float is made by an original process in which the ball is constantly rotated while the copper is electrically deposited, thus securing an absolutely uniform thickness. It is large, heavy, perfectly spherical, hardened by the rolling process, so that it is hermetically sealed, and will remain tight and strong at a pressure of 200 pounds. Each trap is provided with a glass water gauge so that the amount of water by which the trap is sealed may be seen at a glance. The traps are particularly adapted for use in dry rooms, drying cylinders and buildings, taking care of large quantities of water and delivering it very hot to a tank or returning it to the boiler, and also on stacks of pipe for indirect radiation with or without a blower. They will work against any head pressure less than the direct pressure in the trap. The trap is often used in large plants as a water line trap when there is necessity of balancing any particular circulation, thereby preventing snapping and cracking in pipes and radiators. This may be accomplished by connecting to the top of the trap the direct steam pipe and bringing the return below the water line of the trap.

Water-Tube Boilers for Marine Purposes.—It is stated that the British Admiralty is arranging for a series of trials of various types of water-tube boilers. The first-class torpedo boat "Speedy," built by Thornycroft, and the largest craft in the British Navy yet fitted with the tubulous boiler, is now preparing for trials, while in a sister ship, the "Belleville," a water-tube boiler of French design and manufacture will be tried about the same time and under similar conditions. The Du Temple, another French boiler, is also to be tried in a vessel of the same size. Three torpedo-boat destroyers now building from the same designs for the British Navy will differ only in the matter of boilers. One will have a locomotive boiler, and a second will have Yarrow's water-tube boiler, and a third will have Thornycroft's boilers. If the vessels steam in the same waters at the same time, as is likely, the results cannot but be reliable, and they will greatly assist in the solution of the question as to whether water-tube boilers can continue to work at sea under all conditions. The importance of the invention will be appreciated when it is stated that while in a vessel of 810 tons displacement the locomotive boilers give but 3500 indicated horse-power, the water-tube boilers of the same weight are guaranteed to give 5000 indicated horse-power, which means an important addition to speed. The gain in an Atlantic steamer would be enormous. In some of them the power might be doubled, without increasing the weight, if water-tube boilers were substituted for the existing type, so that the proposed trials will be full of interest to shipbuilders.

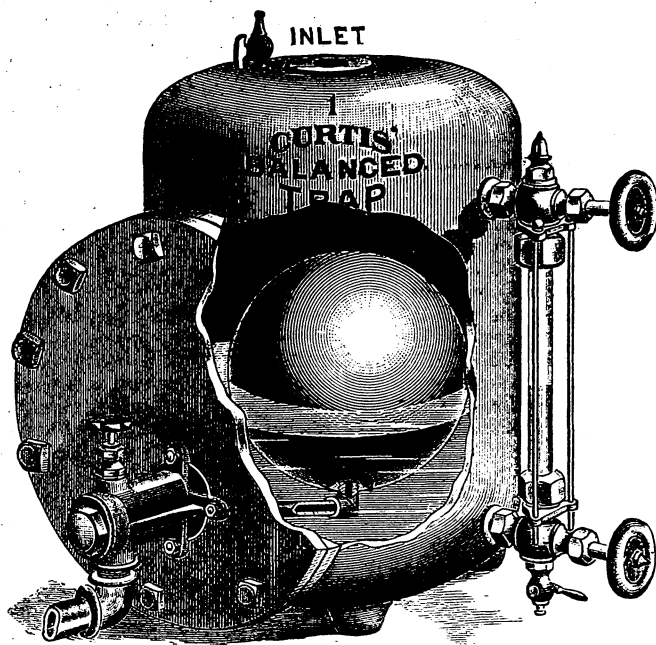


Fig. 1.—THE CURTIS STEAM TRAP.

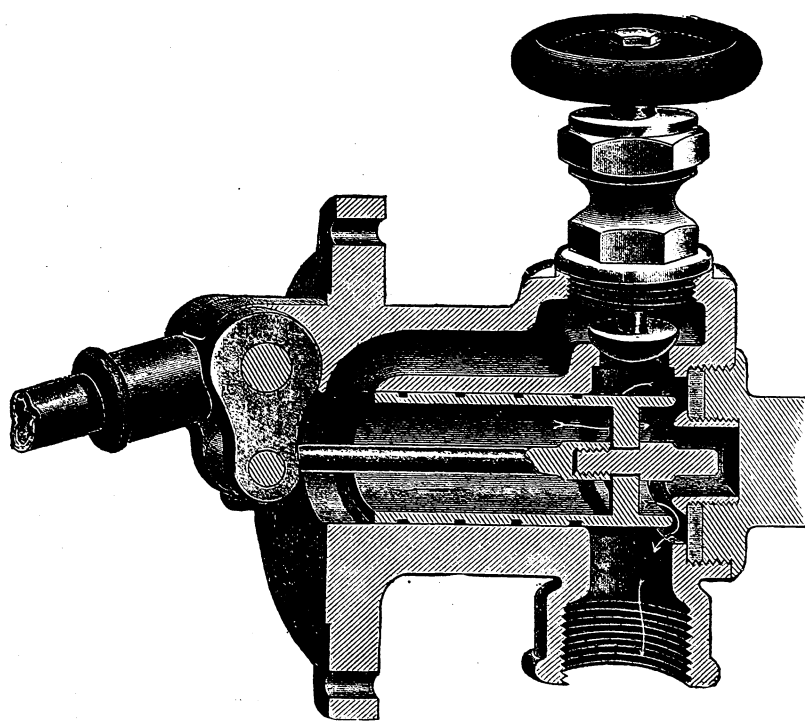


Fig. 2.—SECTIONAL VIEW OF VALVE.

the form of a cylindrical pot with rounded ends, a form which experience has shown to be the best shape to resist pressure, being sufficiently strong to withstand a pressure of 250 pounds. A neck or nozzle large enough to admit the float is placed on one side. This nozzle is covered by a strong plate, to which is bolted the composition valve. Should it be necessary for any reason to take out the float and valve it may be done

which it may be bolted to the cover of the trap. The valve itself consists of a loose tube with water ring packing, resting on a Jenkins seat in the cap of the valve and operating endways by the rise and fall of the float. The flow of the water, which passes through the tube and out between the end of the tube and elastic seat, is cut off by the contact of the end of the tubular valve with the seat, while the water line in

Rod-Rolling Mills and their Development in America.*

BY FRED. H. DANIELS, WORCESTER, MASS.

(Concluded from page 303, August 17.)

Automatic reels may be divided into two kinds—pouring reels and direct-acting traction reels. The pouring reel is either a receptacle in rapid revolution into which the hot rod enters through a stationary pipe, or a conductor pipe in rapid revolution, delivering into a stationary receptacle, the rod seeking in either case automatically that part of the annular bottom portion of the reel receptacle which suits the speed of the rod.

The direct-acting traction reel is a pair of disks working at the proper speed and adapted to seize the first end of the hot rod as it issues from the finishing pair; the surface speed of the reel being regulated by slip of the belt, to suit the speed of the rod.

These improvements in automatic reeling were patented by C. H. Morgan and F. H. Daniels, February 24, 1880, two patents; C. H. Morgan, one patent, February 24, 1880; F. H. Daniels, November 19, 1889, one patent; the application for this patent having been filed in 1886. These inventions are illustrated in Figs. 14 to 17. These four inventions were the first on record to illustrate fully the principles of automatic reeling now in use. One system seizes the wire rod by means of two plates coming together; in other words, a direct-acting traction reel (Fig. 16) with a mechanical seizing device; and the other three, pouring reels, into which the product pours and is coiled without being attached to the reel.

The pouring system is accomplished in two ways: 1, by the rotating pipe system, which acts as a conductor for the wire rod, throwing the rod into circular loops, which are deposited on a stationary receptacle (this is the Morgan and Daniels system of reeling, Fig. 15); 2, the stationary guide pipe, which conducts the hot wire rod to a rotating receptacle, which in the Morgan invention is an annular space formed between two vertical rows of pins (Fig. 14), and in the Daniels invention (Fig. 17) a tub with an inner row of pins. (This last, although the application for patent for it was not filed until 1886, was invented early in 1878.)

But all of these inventions lacked one device to make them a practical success. None of these reels were supplied with means for removing the completed coil from the reel. Early in 1878 I invented a system which is now used in all of the reels of the Washburn & Moen Mfg. Company and in several other mills (Fig. 18). Application for patent for this invention was not filed until 1886, and after a warmly contested interference suit, which was decided in my favor, the patent was issued February 3, 1891, No. 445 965. The invention consisted in combining a spider or lifting plate with the tub reel, the first end of the rod being deposited by the guide pipe upon the annular lifting plate or movable bottom of the reel, whose surface speed varies, being more rapid near the outer edge and slower near the inner edge, and greater and greater from the inner edge outward. For this reason the first end of the wire rod first strikes a horizontal surface whose surface speed

is greater than the speed of the rod, for the first end of the rod shoots across the annular surface of the lifting plate or spider, and rests upon the outer edge of

be coiled up between the rim or outer wall and the inner circle of spokes concentric with such outer wall or rim. This and the beautiful adaptation of the

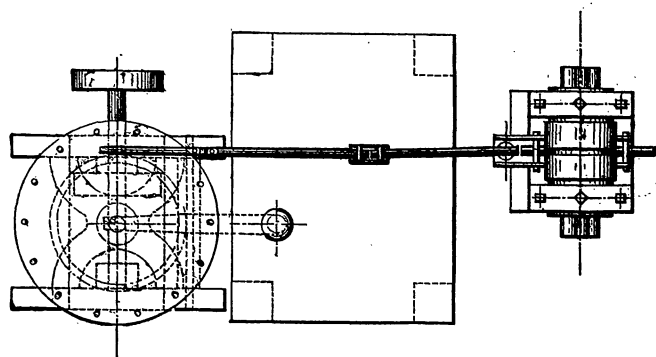
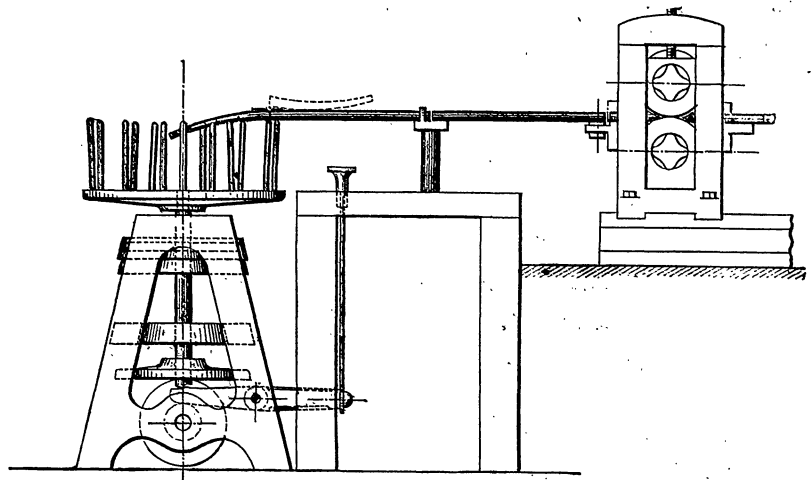


Fig. 14.—The C. H. Morgan Reel for Coiling Wire Rods.

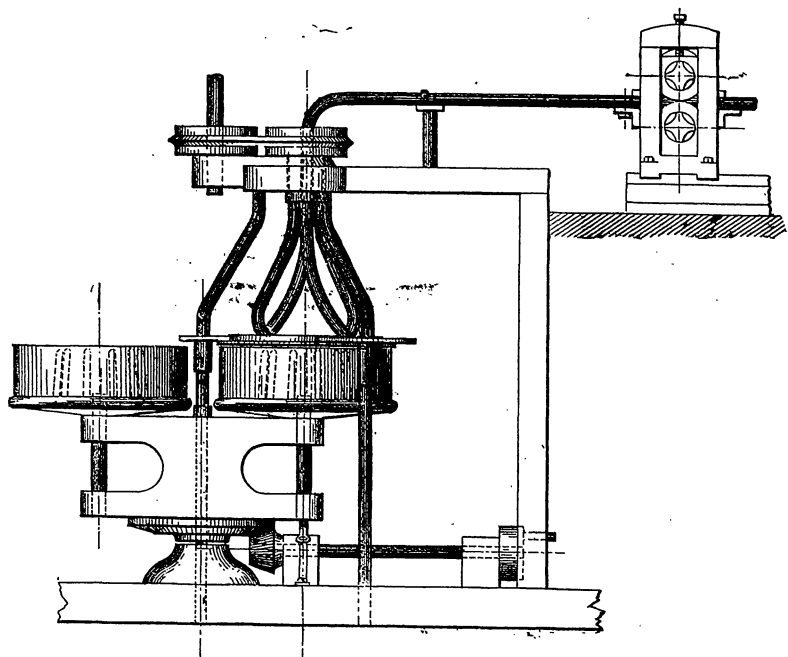


Fig. 15.—The C. H. Morgan and F. H. Daniels Reel for Coiling Wire Rods.

ROD-ROLLING MILLS AND THEIR DEVELOPMENT IN AMERICA.]

the annular plate; and the friction of the first end of the rod on the lifting plate and the rapidly revolving rim or outer wall of the reel causes the rod to

contrivance to the varying speeds of the rod are the most striking features of the invention, for although the speed of the reel is constant, yet when the

* Presented at the Chicago meeting (August, 1893) of the American Society of Mechanical Engineers, and forming part of Volume XIV of the *Transactions*.

wire rod is pulled on—that is, called for faster than the final pair of rolls deliver it—it instantly moves nearer the center of the rapidly revolving annulus, and finds a circle whose surface speed suits it; or if the rod is delivered faster for a moment than the surface speed of the circle of the annulus which supports it, it instantly moves further away from the center and finds a new circle whose speed suits it. The speed of the wire rod as

are using the Morgan and Daniels pouring reel, and largely the rotating pipe, with various devices for removing the coil from the receptacle, and in many cases using the Daniels discharging lifting plate. To be sure, many of the pouring rotating pipe reels introduced differ in construction somewhat from the Morgan and Daniels plan, but in all cases the pouring principle is involved, the coil being formed either by rotating a pipe

were vertical. On the mill, as built in 1879, several joint patents were taken out by us. Immediately after the completion of this mill we constructed a second one, in which eight of the pairs were continuous and six looping. Both of these mills produce as high as 110,000 pounds.

Mr. Garrett had so rapidly increased the output of wire rods, by finishing several rods at a time, that the output of the continuous system became quite insignificant, he having set a pace difficult to follow. In order to increase the output by the continuous system, between 1883 and 1897 I perfected and applied for patents on a rod-rolling mill, using billets of 200 pounds, 4 inches square, rolling the billet in a first mill from 4 inches to $1\frac{1}{2}$ inches, and finishing the product thus formed in several finishing mills (Figs. 20 and 21).

Although it has been suggested by others to finish the product of one train in several finishing trains, they all lacked facilities for making the operation continuous and for handling the product mechanically. This system was patented in 1884, 1886 and 1887, in several patents, and, after extensive litigation, patent No. 440,696, dated November 18, 1890, was issued to me, on application filed September 8, 1887. This plant is now used by the Washburn & Moen Mfg. Company and the American Wire Company, Cleveland, Ohio.

After perfecting for the Washburn & Moen Mfg. Company their large rolling-mill plant at Quinsigamond, the opportunity was presented to build for them a plant at Waukegan, Ill. In 1886 the output of their Quinsigamond mill was 40 tons in ten hours of No. 6 or No. 8 rods. The output to-day exceeds 200 tons in the same time, and for one week has been as high as 2500 tons.

Both the Quinsigamond and Waukegan rod mills are adapted to switch the product of a train of rolls to either one of several conductors, having guiding and controlling walls to prevent the product from escaping sidewise, or buckling, and to deliver the product from the conductors by means of feed rolls. Its very great value and importance is in rolling large billets 4 inches square by 4 feet long or longer, into billets of much greater length and smaller cross section; the smaller billets in practice being a little over one square inch in cross section and about 60 feet long, and these smaller billets are rolled into wire rods and coiled by an automatic pouring reel. In practice it is easy to speed a primary train so as to produce several times as many wire-rod billets as a single secondary train can roll into wire rod. This system is illustrated in Figs. 20 and 21.

It has been the universal practice in continuous mills to roll only one line of metal at a time. It has often been suggested to roll two, and Bedson went so far as to take out a patent for such a system, but never went beyond. In 1891, when it was decided by our company to build their new plant at Waukegan, we determined to undertake multiple rolling continuously, and we are now successfully rolling as high as four lines simultaneously, with an output of 400 long tons in one day of two ten-hour shifts, or 2000 tons a week.

Few rod rollers appreciate the difficulties of continuous rolling; the skilled attendants necessary, combining rare mechanical ability with good rolling-mill judgment, the very delicate adjustment necessary to compensate for the differences in increase in lengths, on account of slight variations in heat and

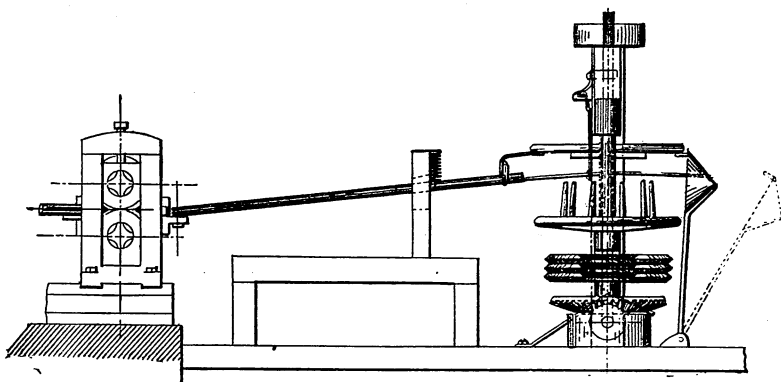


Fig. 16.—The C. H. Morgan and F. H. Daniels Reels for Coiling Wire Rods.

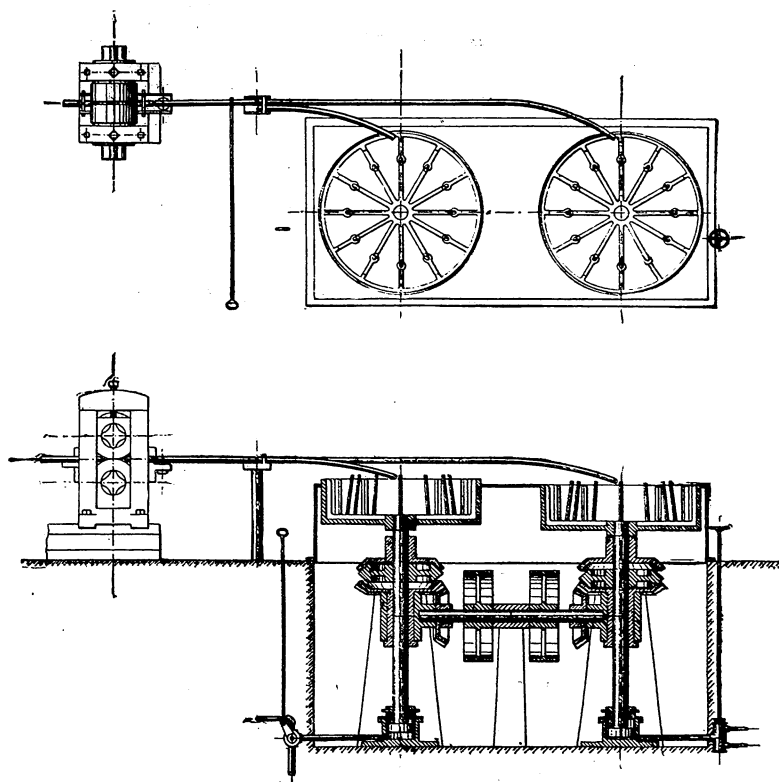


Fig. 17.—The F. H. Daniels Reels for Coiling Wire Rods.

ROD-ROLLING MILLS AND THEIR DEVELOPMENT IN AMERICA.

it issues from the final pair varies a few feet a second from time to time; but these variations of speed of the rod are all automatically cared for, although the speed of revolution of the reel (and of the annulus, which is the lifting plate or movable bottom of the reel) is constant.

Mr. Garrett perfected the direct-acting traction reel in 1888, patented it in 1889 (Fig. 19), and the reel is in successful operation at the Joliet works, although this reel is on the same principle as the Morgan and Daniels reel. All the other rod mills in the United States

or conductor or by rotating a receptacle. Both of these plans were fully tested and developed experimentally at the Washburn & Moen Mfg. Company works early in 1879.

The continuous system of wire-rod rolling was greatly improved and put on a more paying and satisfactory basis in 1879 at the works of the Washburn & Moen Mfg. Company. The writer was then connected with Mr. Morgan in the construction of a continuous mill, having all horizontal rolls, Fig. 12. The Bedson mill was difficult to keep in order, because half the rolls

chemical compositions of the steel, the long train work of gearing to maintain and keep in order, running, as it must, at a very high rate of speed (as high as 1200 revolutions a minute), all conspire to render the problem a very perplexing one. We have often been so discouraged as to be on the point of discarding the continuous system and going back to the looping system, but further successes have always given us new courage. We have, however, advised our friends to put in the Garrett system, and when Mr. Wellman asked us several years ago to advise him regarding the best rod mill for the American Wire Company to install in their plant—i. e., whether the Garrett or continuous system—we advised that, taking everything into consideration, including the expense of the mill and the skilled attendants necessary, the Garrett mill would probably best suit them, and the advice was followed. Later they put in, under Mr. Morgan's direction, the continuous system with automatic reels, but we have been informed that they never regretted having put in the Garrett mill, which produced nearly double the output of the continuous system, as installed by them.

Our people, however, are well suited with their mills at Worcester and Waukegan. To be sure, the continuous rod is not as nearly round as a Belgian rolled rod, and there is about 1 per cent. of croppings, on account of finny ends, which is a defect incident to all continuous mills, but the looping mill makes more scale. Taking everything into consideration, the cost of rolling is about the same on both systems, and the percentage of good rods produced about the same.

In summarizing this sketch of the development of wire rod rolling in this country, it would seem that the first advances, say from 1876 to 1886, were due mainly to two causes: the first being the quality of the metal used and the second the fact that back-and-forth rolling was abandoned and the first end of the billet was kept constantly moving forward at a constantly increasing speed. These two causes in about ten years so increased the output that the reeling apparatus in use before 1886 was incapable of reeling the output, and the advance since 1886 has, in my judgment, been mainly due to automatic reeling.

Work and Prospects in the Mahoning Valley.

What will develop in the near future among rolling mills and factories of the Mahoning Valley is something difficult to determine. Only facts can be dealt with, as no definite information regarding intentions can be obtained from those in control of the various industries. Matters are quiet on all sides, and if it were not for the extensive repairs and alterations going on the prospect of renewed activity very shortly would be remote. As it is, there is a great deal of encouragement in knowledge of the fact that all the rolling mills of this valley are employing quite a number of men getting their plants into good shape for a steady run when the proper time arrives. This gives considerable work to machine shops and foundries and finds employment for many men outside rolling mills.

The improvements which are being made at the works of Brown, Bonnell & Co., Youngstown, indicate that this company intend to be well prepared for

a revival in the iron and steel trade if it should come as predicted by those in this district who are considered competent judges of the situation. The arrangements being made at this plant to concentrate the finished material in a

is made entirely of steel; size, 250 x 70 feet. It will be furnished with a large number of racks for storing material and four 8-ton platform scales. On either side of the building sunken railroad tracks for shipping purposes are laid.

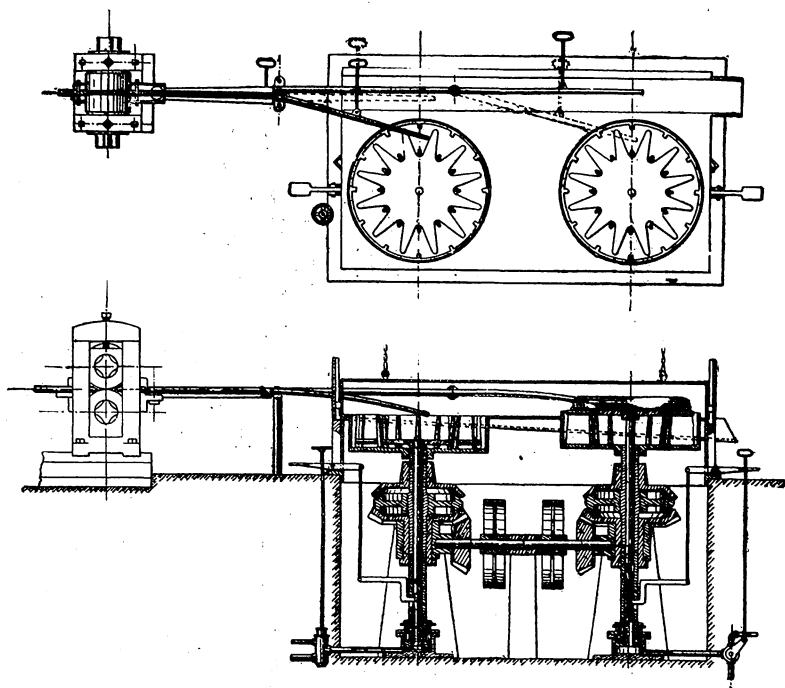


Fig. 18.—The F. H. Daniels Reels for Coiling Wire Rods.

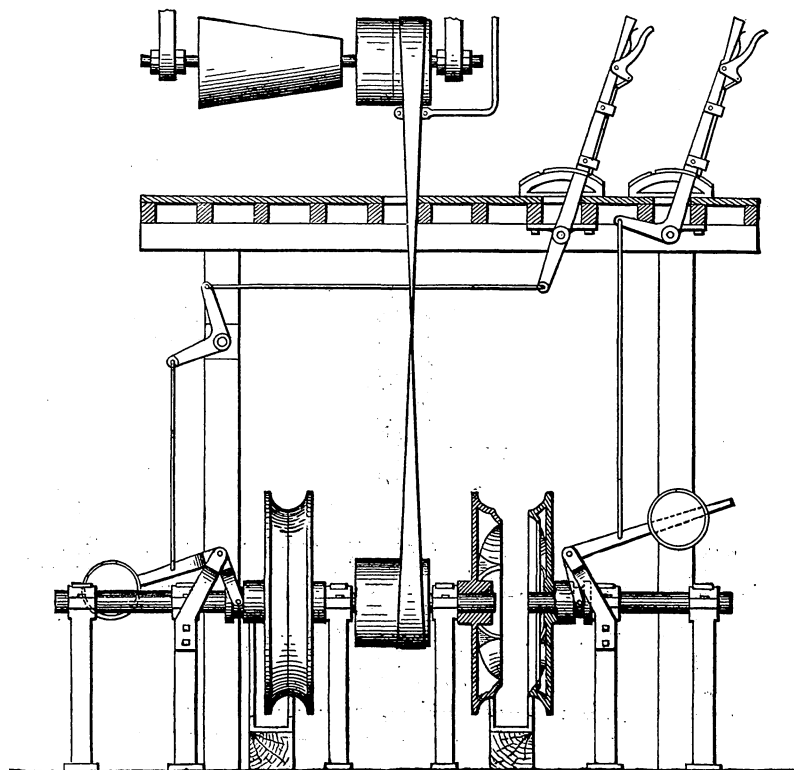


Fig. 19.—The William Garrett Reel for Wire Rods.

ROD-ROLLING MILLS AND THEIR DEVELOPMENT IN AMERICA.

central warehouse have been carefully calculated and will result in great economy and convenience. The new warehouse is built in semicircular shape to conform to the curves of the railroad tracks entering the works. The building, which presents a novel appearance,

This arrangement brings the floor of the cars on a level with that of the warehouse. These tracks enter at the northeast end of the building and are covered by an overhanging roof. The finished product from various mills is brought into the warehouse at the

opposite end on narrow-gauge railroad tracks laid with heavy rails. When complete the arrangements will not be surpassed in any other Ohio mill. In other parts of this plant all roll trains have been overhauled and lined up, rolls have been dressed, and everything is being put into first-class shape.

last week was a 126 inch squaring shear, with scrap shear attached, to the E. na-Standard Iron & Steel Company, Bridgeport, Ohio.

At Niles, Ohio, the Falcron Iron & Nail Company are running their mills. Everybody seems satisfied with the arrangements made for payment of wages,

in naval architecture. Heretofore this subject could only be studied by a visit to the technical schools of Europe.

Western Failures.

Edward W. Eldridge was appointed receiver on the 21st inst., for the Q.

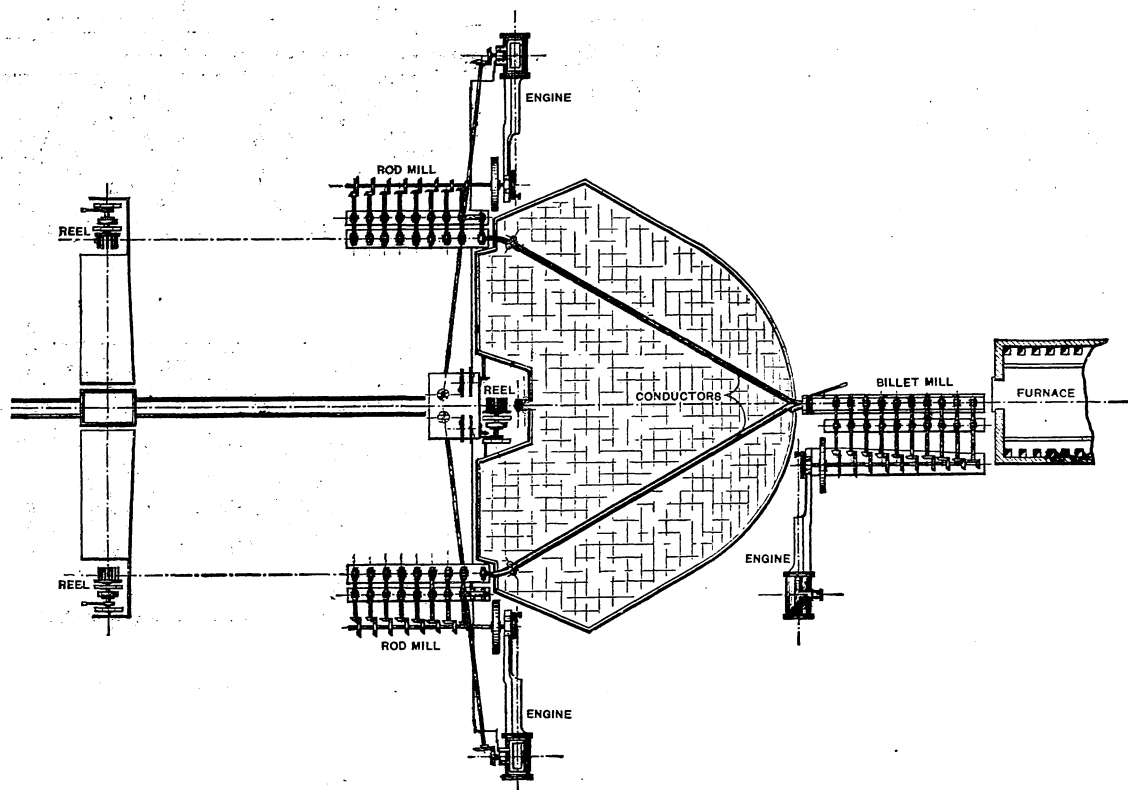


Fig. 20.—The F. H. Daniels Wire-Rod Rolling Mill.

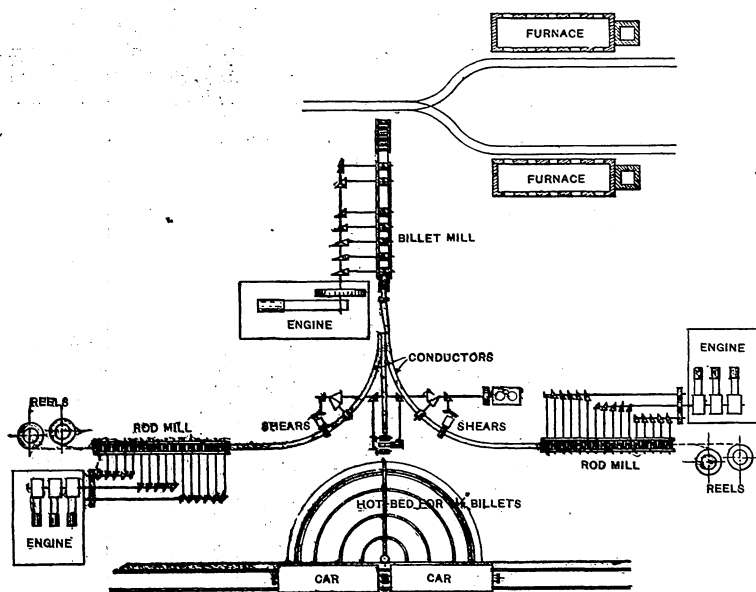


Fig. 21.—The F. H. Daniels Wire-Rod Rolling Mill.

ROD-ROLLING MILLS AND THEIR DEVELOPMENT IN AMERICA.

The Lloyd Booth Company have experienced no trouble whatever in making an amicable settlement of the wages question with their men and are running almost their entire force. The new foundry recently completed was put in operation this week. Among other shipments made by this company

and there is a general air of content. The roofing concerns at Niles have done better business during the past two weeks and there are signs of continued improvement.

The Massachusetts Institute of Technology has established a course of study

& C. Company, whose main office is in the Phoenix Building, Chicago, with branch offices at 29 Broadway, New York, and in Montreal, Canada. They are manufacturers of railroad specialties and of the Bryant metal saw. They have conducted a large business and the failure is partly attributed to dissensions among the stockholders.

The T. E. Roberts Foundry Company, located on Paulina street, near Blue Island avenue, Chicago, made an assignment in the County Court on the 22d inst., in favor of Eldridge T. Russell. The assets and liabilities were both scheduled at \$24,000. The failure was caused by a decrease in the volume of business and poor collections. Efforts will be made to have the creditors of the concern co operate with the managers with an idea of the company's resuming business.

The Chicago Iron Works, manufacturers of mining machinery at Clybourn avenue, Hawthorne and Willow streets, Chicago, confessed judgment on the 23d inst. on a note for \$42,600 made to George M. Grabl.

F. W. Lamb & Co., manufacturers of steam heating apparatus at 258 Michigan street, Chicago, made a voluntary assignment in the County Court on the 25th inst. August Kehm was appointed assignee to take charge of the firm's property, and assets were scheduled at \$50,000, with liabilities of \$32,000. The failure is attributed by the attorney for the assignee to the dullness of trade and slowness of collections. An effort will be made to resume business by agreement with the creditors.

The Open-Hearth Process.—II.*

BY H. H. CAMPBELL,

Superintendent of the Pennsylvania Steel Company, Steelton, Pa.

7. The Basic Process.

For basic practice the hearth must be either basic or neutral—it is immaterial which, for it cannot be too strongly insisted on that, in the basic as in the acid process, the hearth is only a passive agent. Rammed magnesite is undoubtedly the best material for the basic hearth, but owing to its high cost in the United States, thoroughly calcined dolomite is generally preferred. Chromite makes the best passive joint between the basic hearth and the silica walls and roof, but satisfactory results depend quite as much on the method of application as on the material.

As to the basic charge, the proportion of pig iron that may be used advantageously is somewhat higher than with an acid hearth, since it is less objectionable to mix ore with the metal in the original charge. For the basic addition burnt lime is to be preferred to raw limestone, but since the former costs considerably more than the latter per unit of basic content, the final balance sheet of profit and loss, which is always largely affected by local considerations, will determine which of the two materials, the raw stone or the burnt lime, is ultimately the more advantageous.

In arranging the stock in the basic hearth, care should be taken to protect the slag line from the silica formed from the pig iron. Some of the lime is put near the slag line and the rest is mixed with the stock in such a way that it does not rest on the bottom, and yet is in position to catch the silica from the pig. There is no advantage in reserving part of the lime for a later addition.

The production of much iron oxide during melting does not, as in the acid process, involve large waste, for the excess of ironoxide cannot find free silica, and therefore remains as such in the slag, awaiting future reduction. Hence if ore is mixed with the metal the waste is not augmented, as it is very likely to be in the acid hearth.

The affinity of phosphorus for oxygen tends to protect the iron from oxidation and permits the use of more scrap in the charge, as shown by the author's detailed calculations.

The fluidity of the slag is very important, and furthermore, the slag must be so basic that it does not cut the hearth. These two considerations determine the nature and amount of the basic additions. The practice of melting with insufficient lime and tapping the slag soon after fusion, thus avoiding the necessity of thoroughly satisfying the silica so removed, is more seductive on paper than in practice, as the removal of any considerable portion of the slag requires great care and often causes trouble. The opposite plan of melting with a very calcareous slag and flushing off with it a large proportion of phosphorus is likewise objectionable on account of the viscous nature of such a cinder. The best practice with a stationary hearth is to make a good slag at the start and to hold all of it in the furnace to the end. With a tilting furnace the slag may be partly removed by

decantation, or almost wholly removed by pouring out the entire charge and returning the metal to the furnace.

With tabulations of 17 basic heats, the author discusses the record of oxidation and the composition of the slag, showing that as a rule with a low-phosphorus charge, if the basic addition be reduced to such a point that none remains for the slag to pick up during the last part of the operation, the bottom will be scorified; on the other hand, that with high phosphorus, if an attempt be made to keep down the lime, a long time will usually be required to remove the phosphorus, and the lengthened exposure will occasion cutting of the hearth and waste of iron to form the required base.

The eliminations of phosphorus during melting and after fusion are separately considered. The elimination during melting, as shown by several tables, varies under different stated conditions from 27 to 88 per cent., the highest elimination occurring without the use of ore, but where initial phosphorus is lowest and the percentage of carbon in the melted bath is likewise lowest. In a second set of tables the final dephosphorization, after fusion, is investigated by means of slag analyses, and it appears that as a rule good dephosphorization accompanies low silica and high iron oxide in the slag. With a given phosphorus content in the charges, the percentage of silica and iron oxide combined adjusts itself to a constant quantity. When phosphorus is high, this combined percentage runs about 27.5 per cent.; with medium phosphorus 35 per cent., and with low phosphorus about 36 to 37 per cent. Whether the iron oxide in this combination is valuable for its oxidizing power, or for promoting the fluidity of the slag, remains undecided.

With regard to the removal of sulphur from the metal, a tabulated record of work shows that (1) its elimination by metallic manganese during recarburization is uncertain, though probably the sulphur content is reduced by about 0.01 per cent. (2) The presence of a sulphurous slag due to a high initial content of sulphur does not necessarily interfere seriously with the action, but sometimes induces a considerable resulphurization. (3) The conditions favoring desulphurization do not seem to depend upon either the amount of manganese burned or any particular composition of the slag, but on some factor not usually recorded.

Under ordinary conditions, with an initial sulphur content below 0.10 per cent., the results are discordant. Sulphur is usually reduced about 0.02 per cent. during the heat, yet frequently no elimination occurs. With high-sulphur stock, on the other hand, an initial content of 0.20 to 0.30 per cent. sulphur may be reduced considerably during melting and oreing, so that the steel will contain less than 0.10 per cent. A decrease in the percentage of silica in a slag, as shown in the tables, increases its power of absorbing sulphur where other factors remain unaltered. The efficacy of manganiferous ore in desulphurizing the bath is clearly demonstrated by the results, thus confirming the experience of Massenez and others.

8. Preferential Relations.

No investigation of the open hearth process can fail to reveal the importance of the relative intensity of the several metallurgical factors. The relations of silicon, manganese, carbon and phosphorus to their various oxides practically determine the result.

At very high temperatures oxygen unites with manganese or carbon in preference to silicon, yet where a slag is rich in bases the carbon fails to reduce silicon from the slag, and for this reason silicon is rarely found to any extent in basic open-hearth metal.

On the acid hearth, where all the available bases are needed, manganese is oxidized early in the operation, but in basic work there is less call for the product of its combustion, and the bath, therefore, usually retains appreciable manganese to the end. When manganiferous ore is added to the charge the manganese may be reduced, as shown by experiment, even in the presence of oxidizing forces, manifested by the concurrent combustion of carbon.

The combustion of carbon to carbonic oxide is dependent, at low temperatures, upon the prior claims of silicon and manganese, but at high temperatures carbon assumes control, stops the combustion of silicon, and even under favorable conditions decomposes its oxide; it adjusts the proportion of iron in the slag according to the basicity, and under certain circumstances reduces metallic manganese from the cinder.

The history of phosphorus, which metallurgists of the last generation could not write, appears to be the record of a simple preferential relation. When the slag is low in silica, the weaker phosphorus has a chance to enter it. The critical percentage of silica and the absorbent power of the slag at that percentage vary with each particular combination of the remaining elements, with the intensity of the reducing conditions and with the duration of the exposure. The sum of SiO_2 and P_2O_5 , taken from a large number of analyses of basic slags, shows that the total acid content of the slag is the measure of its power to absorb phosphorus. But the transfer of phosphorus from the metal is influenced also by the composition of the metal. With high carbon and a strong reducing action there is a tendency to postpone the phosphorus oxidation. With the combination of high carbon and low phosphorus the percentage of elimination is very uncertain.

9. Recarburization.

As previously observed, high-carbon open-hearth metal is made by interrupting the process when the bath contains the desired carbon percentage. The function of the final addition, therefore, is to furnish manganese, or silicon, or both, the carbon under ordinary circumstances being looked upon as a necessary but objectionable companion of these two elements. The exact chemical reaction resulting from the addition of the recarburizer cannot be given. The bath contains an oxidizing agent which will burn manganese. That the gas contained in the bath is not that agent appears from analyses made by the writer, showing it to be composed of 85.6 per cent. of CO and H. It is reasonable to suppose that one of the oxides of iron is present in the bath, and that to it the oxidation must be ascribed.

Numerous experiments recorded by the writer show that greater uniformity is attained by adding the ferro in the ladle than in the furnace. The loss of manganese by recarburizing in the acid furnace increases in amount and also in percentage with the quantity added; it is greater with the lower than with the higher grades of ferro, and increases as the carbon in the bath decreases.

The loss of manganese in the ladle increases with the amount added, thus

* Abstract of a paper read at the World's Engineering Congress, Chicago, before the American Institute of Mining Engineers. The paper itself is the most comprehensive and able presentation of the subject yet published.—Editor *The Iron Age*.

indicating that in the case of low manganese, the washing of the metal is not complete, but the percentage of loss does not increase, and, therefore, it is to be inferred that where the percentage of loss does increase, as in the furnace, the effect must be due to the flame or the slag, rather than to reactions in the metal itself.

In basic practice rephosphorization sometimes occurs with the use of the recarburizer, the action being intimately connected with the composition of the slag. From numerous tabulated results the following conclusions are drawn:

1. With slags containing under 5 per cent. P_2O_5 , and not over 20 per cent. SiO_2 , the rephosphorization need not exceed 0.01 nor average over zero per cent.

2. With slags containing from 5 to 10 per cent. P_2O_5 , and not over 19 per cent. SiO_2 , the rephosphorization need not exceed 0.015 nor average over 0.005 per cent.

3. With slags containing from 10 to 15 per cent. P_2O_5 , and not over 17 per cent. SiO_2 , the rephosphorization need not exceed 0.02 nor average over 0.005 per cent.

4. With slags containing from 15 to 20 per cent. P_2O_5 , and not over 12 per cent. SiO_2 , the rephosphorization need not exceed 0.02 nor average over 0.01 per cent.

10. The Conditions of Successful Practice.

The use and control of the two agents at the command of the open-hearth steel melter—namely, heat and oxygen—produce all the variations of which the process is capable under a given set of conditions. These conditions having been duly discussed, we are next brought to the consideration of furnace manipulations. The best presentation of this subject known to the writer is to be found in the paper by H. D. Hibbard, published in *The Iron Age*, July 2, 1891. In quoting and discussing this paper at length the author dwells on the importance of the casting temperature, since the greater part of the crystallization record will be made while the steel is fluid, and therefore the extent of such phenomena will depend on the excess in the temperature of the molten metal over the point of solidification.

11. The Use and Loss of Material.

a. The Acid Process.—In discussing losses of material in the open-hearth process, writers would greatly facilitate the drawing of comparisons by mentioning the proportion of pig iron used in the charge, and whether the ore is included in the list of material charged. Uncertainty on these points must create confusion in any attempt to estimate the relative merits of different practices. The theoretical losses due to sand and oxidizable elements in the pig, to mechanically and chemically combined iron in the slag, and to the ore and recarburizer used, may be computed for any given practice. Such a computation, based on 15 consecutive acid pig-and scrap heats, shows a theoretical loss of 3.58 per cent. while the actual weights call for a loss of 4.3 per cent., a difference of 0.7 per cent. Part of this deficit is carried down the port; part is lost in sparks and minute splashes during tapping, and the remainder is within the probable error of the determinations.

A similar computation based on ten consecutive acid pig-and ore heats shows a theoretical gain (occasioned by the

large amount of iron reduced from the ore) of 1.2 per cent., as against an actual loss of 0.7 per cent., a difference of 1.9 per cent.

b. The Basic Process.—Calculations of the theoretical losses in basic working disclose incidentally the great difference in the values of different limes as absorbents of foreign silica. A detailed comparison between five representative types of conditions, embodying as many different relations of pig and scrap to phosphorus and silicon, show theoretical losses and gains varying between the extremes, respectively, of 2.32 and 2.15 per cent. A record of continuous work of one basic furnace in producing over 2400 tons of steel shows an actual loss of 5.9 per cent., while theory calls for 4.54 per cent., a discrepancy of only 1.36 per cent. Such results are reassuring with respect to the accuracy and trustworthiness of theoretical computations and discussions of open-hearth work.

H. D. Hibbard of the Taylor Iron & Steel Company, High Bridge, N. J., contributed the following in the discussion: This remarkable treatise—for it is more than a paper—is by far the most valuable work on the open-hearth process that has ever been written, and will doubtless be a standard work on the subject for a long time.

One finds but little debatable matter, as the statements made are, as a rule, supported by too much evidence to be successfully assailed. About all we can do is to emphasize such points as seem especially important, though often overlooked, and also perhaps add a little here and there.

The point raised that the draft through the gas and air chambers should be governed separately is very important. The need for this was first felt by the writer about 12 years ago, and three years ago he intended to patent a furnace in which the chief novel feature was to be an independent damper between the gas-reversing valve and the chimney flue to regulate the division of the draft, getting so far as to sketch the furnace to scale, when a published notice of a similar device in use abroad caused a suspension.

The author possibly underrates the value of the tar in the gas. Whether or not it is decomposed in passing through hot regenerators is a matter of conjecture. It has been volatilized once, though probably at a lower heat. If chemically "cracked," the soot formed would largely be carried along by the gas to the hearth or it might be changed into CO by the action of CO_2 and O in the gas. In either case it would reach the hearth, where its full value as a fuel would be realized.

Regarding placing the producers near the furnace in order to save as much as possible of the sensible heat of the gas, there is one way in which this heat may be utilized, and that is by decreasing the size of the gas generator while that for the air is made larger. This will cause the air to enter the hearth at a higher temperature. The gas being hot requires less heating and, therefore, by this plan more of the waste heat may be returned to the hearth, increasing the fuel economy by that amount. Water-cooled valves, if desirable, which they are probably not, could be used without materially cooling the gas as it rushes through them.

In the estimation of the temperature of the bath we see on looking into the furnace, broadly speaking, four different degrees of temperature: 1, the flame, which is hottest; 2, the walls of the furnace; 3, the slag on the

surface of the bath, and 4, the slag in the wakes of the bubbles rising from the metal itself, which is the coldest and which indicates its degree of heat. Observation of these four give comparative temperatures, and one can notice if they present the usual differences or not, and so judge the temperature of the metal pretty closely. Under normal conditions the metal is the coldest thing in the hearth of the furnace except the bottom under it. At times it will be the hottest thing in the hearth, either accidentally, as the author states, or purposely when its temperature may be too high for casting, and the hearth may be cooled down. When this is done by shutting off the gas, as is often done with a furnace using natural gas, the walls may get very much colder than the metal, and the wakes of the bubbles will appear white on a red background when seen through melters' blueglasses. A pyrometer seems to have no field here.

Regarding the joint in basic furnaces, between the basic bottom and the acid walls, it has been pretty well demonstrated that if it (the joint) be vertical and therefore free from pressure, it will stand well enough for commercially successful work. The slight fluxing which there will be may be easily repaired with either chromite or magnesite.

In discussing the relative compositions of the slags in the acid and basic processes, it should be remembered that: 1. In the acid process when ore is used to decarbonize, the silica of the slag is continually combining with the oxide of iron, thus removing it from the field as an oxidizing agent or carrier of oxygen; while, 2, in the basic process the amount of free oxide of iron is not decreased by such action, and, therefore remains to be a carrier of oxygen to the metal. In the acid process ore must be added to replace that taken up by the silica, or decarbonization will gradually cease. In the basic process ore continues its work with scarcely abated vigor to the end, and much less will therefore do the work. Many a "wild," unmanageable, over-oxidized heat of steel has been made in the basic furnace because ore was added as freely as in a similar acid furnace.

It may be said in connection with dephosphorization that a pig iron free from sand would make a much more desirable material for use in the basic furnace than that usually obtainable for the purpose. Such a pig would favor the production of low-sulphur steel, as higher combined silicon would be permissible in the iron, which generally occurs with lower sulphur.

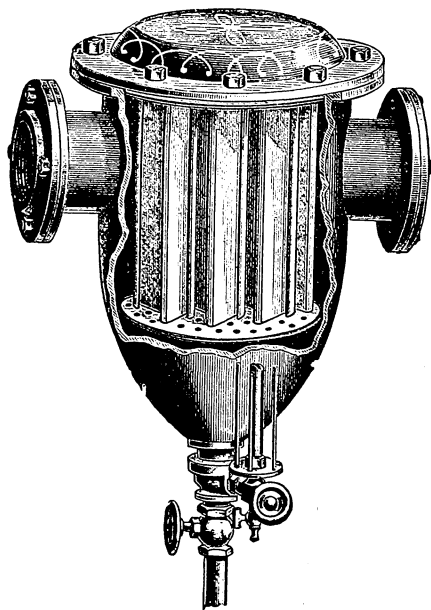
The author dissects a modest paper contributed by me to *The Iron Age*. He objects to my introduction of the kind of hearth into my list of variables, considering it unimportant. To this I would reply by asking if members would think the list complete were the kind of bottom left out of consideration. One can perfectly agree that "the highest function of the hearth is to remain passive," but how often it comes down from its position of highest usefulness and gets into the slag, with a persistence worthy of a better cause, where its absence would be much more desirable than its presence and where it plays a part in the operation. Neutral bottoms cover such as beauxite and chromite, which are not very silicious and yet which do not by the slags they yield act on the charge as do basic bottoms, using the term in its usual acceptance. In the remark "high temperature

retards boiling while low favors it," the point in mind was that due to the occlusion of gases. At higher temperatures the boiling is less on account of this increased solvent power of the metal for gases whose escape produces the phenomena of boiling.

Regarding loss in melting, I have found it to be pretty nearly a function of the length of time taken in melting the charge. The quicker the charge is melted the less the loss. The flame is essentially oxidizing, and that which melts the fastest seems to have as little oxidizing effect as any. This loss of melting is, of course, subject to modification afterward during decarbonization by the action of the reducing elements, but in many, if not most furnaces, with not over a third of pig iron in the charge, there is little or no reduction of metallic iron from the slag. The furnaces from which Mr. Campbell has obtained most of his data are very quick melters and present unusually mild oxidizing conditions.

Separator for Live and Exhaust Steam.

It has been generally conceded that the use of high-speed engines with small clearance in connection with priming boilers and extended lines of steam pipe necessitates the separation of the water of condensation from the steam in order to increase the efficiency and durability of the engines. In view



Separator for Live and Exhaust Steam.

of this fact Warren Webster & Co. of Camden, N. J., have designed a separator which, it is claimed, will automatically separate the water of condensation from the steam, and where exhaust steam is turned to account, will remove the oil, grit and foreign matter from the steam. The oil passing through the engine cylinders and extracted by the separator may, after filtration, again be used.

The casing of this separator is of cast iron for the small sizes, and in the larger sizes is of wrought steel. It is proportioned so as to allow of an internal area 25 per cent. greater than the size pipe for which it is to be connected, in order that it may withstand the service it is designed for, and to prevent the occurrence of back pressure

or a reduction in the velocity of the steam. The trap or baffle consists of a series of baffle plates made of copper and provided with ends bent in opposite directions, so as to form channels which will be effective no matter from which side the steam enters. The baffle plates are connected at the top and bottom with perforated diaphragms. Pipe connections provide for the inlet and outlet of the steam, and a discharge opening at the bottom allows of the draining of the contents by means of a cock. Between the cock and the discharge opening is a branch, having connected with it a gauge or column to indicate the contents of the separator. The operation is as follows: Steam is admitted into the separator, and on entering is deflected easily from one to the other of the series of baffle plates, which, being of the nature of pockets, retain or trap the water of condensation, oil and foreign matter, while the clear and dry steam thus left escapes through the discharge pipe. The water and foreign matter impacted on the plates flow down the channels or gutters in the plates and through the diaphragms until they reach the discharge outlet, and are removed. The oil and grit are upon removal easily separated, and the water may be returned to the boilers.

The Greenerd Arbor Press.

The construction of the arbor press, made by Chandler & Farquhar of 177 Washington street, Boston, is very clearly shown in the accompanying engraving. The press is so designed as to be clamped to the end of the lathe bed, within convenient reach of the workman. It is very evident that the use of a press of this kind obviates all danger of marring, upsetting or springing the arbors, either of which is liable to occur when the arbors are driven in and out in the old way. It also saves cleaning out the centers and taking off the dogs, and saves defacing or otherwise damaging finished work. This press is now built in three sizes for work from 6 to 12 inches in diameter, arbors from 1 to 1½ inches in diameter and 5 to 9 inches in length.

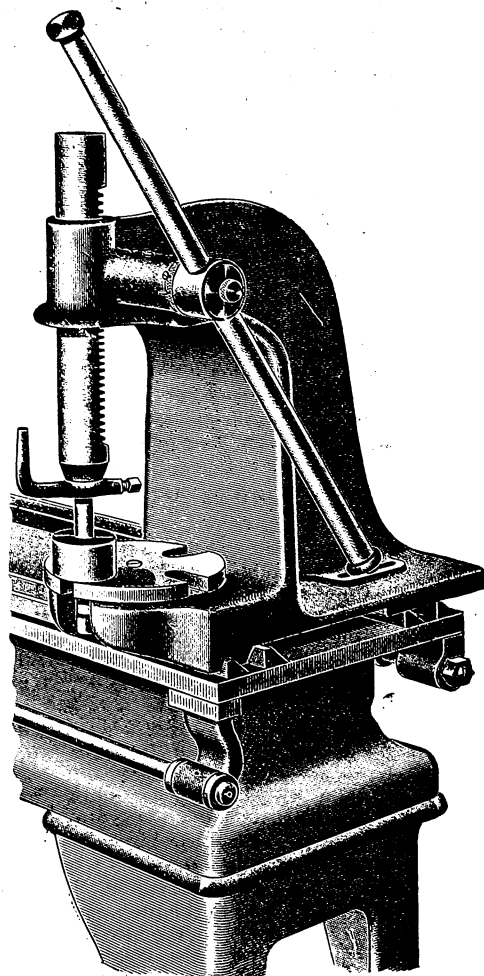
Units of Electrical Measure.

At the congress of electricians held in Chicago last week, America was honored for the first time by the bestowal of the name of one of its great electricians upon an electrical unit. France has been recognized in the ampère, Italy in the volt, England in the watt, and now America has been recognized in the henry. The name "henry" has been given to the unit of self induction in honor of Prof. Joseph Henry, formerly professor in Princeton College and afterward secretary of the Smithsonian Institution at Washington. Professor Henry was the first to observe the phenomenon for the measurement of which this unit is used. Professor Henry ranks as one of the great early discoverers in the field of electricity. It was he who made all the early experiments on self-induction and it was he who made the experiments which made it possible for Morse to produce the telegraph. The following resolutions were adopted:

Resolved, that the general governments represented by the delegates in this International Congress of Electricians be and they are hereby recommended to formally adopt as legal units of electrical measure the following:

As the unit of resistance the international ohm, which is based upon the ohm equal to 10-9 units of resistance of the initial C. G. S. system of electro magnetic units, and is represented by the resistance offered to an unvarying electric current of a column of mercury at the temperature of melting ice 14-4521 grammes in mass, of a constant cross-sectional area, and of a length of 106.3 cm.

As a unit of current the international ampère, which is 1-10 of the unit of a current of the C. G. S. system of electro-magnetic units, and which is represented sufficiently well for practical use by the unvarying current which, when passed through a solution of nitrate of silver in



The Greenerd Arbor Press.

water, in accordance with accompanying specifications, deposits silver at the rate of 0.001118 gramme per second.

As a unit of electromotive force the international volt, which is the electromotive force that steadily applied to a conductor whose resistance is 1 international ohm will produce a current of 1 international ampère, and which is represented sufficiently well for practical use by 1000-1434 of the electromotive force between the poles or electrodes of the voltaic cell, known as Clark's cell, at a temperature of 15° C., and prepared in the manner described in the accompanying specifications.

As the unit of quantity the international coulomb, which is the quantity of electricity transmitted by a current of 1 international ampère in one second.

As a unit of capacity the international farad, which is the capacity of a conductor charged to a potential of 1 international volt by 1 international coulomb of electricity.

As the unit of work the joule, which is 10-7 units of work in the C. G. S. system, and which is represented sufficiently well for practical use by the energy expended in one second by an international ampère in an international ohm.

As the unit of power the international watt, which is equal to 10-7 units of power in the C. G. S. system, and which is represented sufficiently well for practical use by the work done at the rate of 1 joule per second.

As the unit of induction the henry,

which is the induction in a circuit when electro-motive force induced in this circuit is 1 international volt, while the inducing current varies at the rate of 1 ampere per second.

THE WEEK.

Within the last six months the East-bound railway freight rates on many California products have been very materially reduced, owing to sea competition through the port of San Francisco. On some goods the freight has been cut down to one-third of the former charge, notably in wool, canned goods, barley and fruit.

Canadian sealers are reputed to have decided on making Yokohama their headquarters in place of Victoria, B. C., although still flying the British flag. Time and profits can, it is claimed, be saved by this arrangement, and outfitting is cheaper in Yokohama.

On August 24 the national bank note circulation of the United States for the first time passed the \$200,000,000 mark. The increase since January 1 has been more than \$30,000,000.

Mayor Pingree of Detroit has recommended the issue of city bonds in denominations of \$20 and \$25, with the view of providing necessary currency in that city.

An astonishing scheme for getting rid of our surplus silver comes from the brain of a Californian, which has been ventilated in San Francisco journals. It is no less than a proposal that the United States should purchase British Columbia, and pay for it \$100,000,000 in silver bullion. Thus he believes a very valuable acquisition would be obtained for the country and an incubus would be removed. This is very nice, but perhaps Great Britain might think British Columbia worth more than the sum proposed, or she might even decline to sell at any price. At any rate she ought to be consulted before the thing is settled, as the proposer appears to work off-hand by the introduction of a bill authorizing the transaction, for which he claims to have support in both houses of the Legislature.

Baltimore wants a ship canal across the Eastern Shore peninsula.

The Canadian Pacific Railroad has declined to take part in the coming meeting of transcontinental lines to be held in Chicago on September 5, for the purpose of discussing the desirability of restoring freight and passenger rates to the same basis as obtained in February last. The reason given by the Canadian line is that, as it had no part in disrupting the tariffs, it leaves the patching of them to those who cut them up.

A good deal of interest is excited in Philadelphia over the rumor that A. A. McLeod, ex-president of the Reading road, may become president of the Baltimore & Ohio Railroad. Mr. McLeod is said to have many influential supporters still in Philadelphia in spite of his disastrous management of the Reading system.

From the agricultural statistics lately published we learn that of a total of 8,086,837 acres of cultivated land in the State of Texas, 4,520,310 acres were, in 1892, devoted to cotton and 3,166,358 to corn. The farm products from this area, during the 12 months, were valued at nearly \$131,500,000, an increase of \$30,000,000 over the returns

for 1888. During those four years there was an increase of 13 per cent. in acreage, and of 18 per cent. in the number of farmers. The Lone Star State has been thus steadily increasing her production and adding to her wealth during these years of Southern depression in a most satisfactory fashion, which promises well for her future prosperity.

Senator Chandler of New Hampshire fathered a motion last week in the Senate to instruct the Committee on Commerce to inquire into the expediency of construction, in the near future, of an interior coast line of waterways across the head of the peninsula of Florida, along the coast from Florida to Hampton Roads, between Chesapeake Bay and Delaware Bay and by Cape Cod. The idea is to use in part the vast system of salt-water sounds extending from Chesapeake Bay to Florida, which can at a comparatively small cost be connected by short canals, and so afford an advantageous Atlantic coast waterway, which would be of great commercial and military advantage. Government aid would be required to carry out the project.

Pacific Coast papers mention a project that is said to be on foot in California to construct a ship canal in that State at a cost of \$10,000,000. The scheme provides for a main canal from Suisun Bay to Tulare lake, a distance of 175 miles. From the Lake it is to be extended to Bakersfield, Kern County, a total length from its mouth of 230 miles. From this point branches could be cut to many important towns. The waste water from its locks, after having been used for driving electric motors and creating power, could be distributed for irrigation. The scheme is an ambitious one, but some such system of interior waterways would prove of great benefit to the trade of the Pacific Coast.

An International Irrigation Congress is to be held at Los Angeles, Cal., commencing on October 10, for the discussion of irrigation methods and kindred topics. Foreign governments have been notified and their co-operation through delegates requested.

Canadian farmers are complaining of the scarcity of help. In the country adjoining Montreal they have found it impossible to get men for the haying, and as a result thousands of tons of hay will not be cut this season for lack of hands to stack it.

British consular officers report a tendency to extend the cultivation of cotton in certain districts of China. A steam cotton-ginning mill, which has lately been established near Ningpo, is said to be worked with great success, and a demand for foreign machinery of like description is developing in other portions of the Empire.

Frederick D. Tappen, chairman of the New York Clearing House Loan Committee, last week expressed his conviction that within one week of the repeal of the Silver Purchase law one half of the outstanding loan certificates would be canceled, such would be the immediate return of confidence.

From estimates given by the Hungarian Minister of Agriculture in his annual crop report the present year's wheat production of the world is 2,279,000,000 bushels, against an average of 2,280,000,000 annually for the past ten years. The deficits to be filled this year by the importing countries

will require, as calculated, 379,000,000 bushels, while the surplus available in exporting countries to satisfy this demand is 378,664,000 bushels.

Cincinnati, through the Board of Trade of that city, is working for the establishment of a ship canal between the Ohio River and Lake Erie, using a part of the beds of the Maumee and Miami rivers. Such a canal would, it is believed, greatly benefit many cities and towns on its route, besides giving direct communication between Cincinnati and Toledo.

The \$300,000 suit brought by the Toledo, Ann Arbor & North Michigan Railroad against Peter M. Arthur, chief of the Brotherhood of Locomotive Engineers, for damages sustained during the famous strike carried out under his orders, was brought to a sudden ending Saturday. A mutual settlement was arranged by which the suit was withdrawn, Arthur paying the costs. This will not, however, affect the case now pending in the United States Supreme Court as to the right of the employee to quit work whenever and wherever he pleases.

The revival of canal building at the present time is important. This is caused by the appreciation of the fact that there is a vast amount of heavy tonnage which does not demand speedy delivery, which can be transported cheaper by canals than by railroads. The city of Manchester, Eng'nd, is constructing a canal that will make it an inland seaport; the Corinth Canal has been opened, and surveys have been completed for a canal to connect the Caspian and Mediterranean seas.

The receivers of the Reading Railroad Company have abrogated the contract between the company and Cox Brothers & Co., involving the movement of 1,000,000 tons of anthracite coal annually. The receivers claim that the company did not get a fair profit out of the rate paid for tonnage by Cox Brothers.

Work has been begun on the trans-continental telegraph line from Cape Town to Cairo in Africa. The undertaking, which is under the auspices of the British Government, should be an important factor in the opening up of the "dark continent."

The 44 United States owe, collectively, \$224,000,000, and pay to the holders of State securities \$10,000,000 a year as interest. Notwithstanding the large increase in population during the last ten years, the State debts have decreased \$10,000,000.

The steel steam yacht "Columbia," which was launched on August 23, from the shipyard of the Charles Hillman Company, Philadelphia, is in proportion to her displacement the highest powered private steam vessel in the world. The yacht, which is the property of J. Harvey Ladew of New York, is 180 feet on load water line by 22 feet beam and 15 feet molded depth, her trial draft of water being 10 feet, and her corresponding displacement 436 tons. She has a four-cylinder triple-expansion engine of about 1800 indicated horse-power under forced draft, and the Cramps, the original contractors for her construction, guarantee her to develop a speed of 18 knots an hour over the course of the American Yacht Club, from Larchmont to New London.

The Iron Age

New York, Thursday, August 31, 1893.

DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

The Repeal of the Sherman Act

The unexpectedly large majority secured in the House of Representatives for the repeal of the Silver Purchasing law must be regarded as a distinct triumph for the solid business interests of the country. Its greatest good is likely to come from the effect which it will produce upon the trimmers and talkers in the Senate. Even as it is, the business world has had its patience taxed to the limit of endurance. When commerce and industry are in the condition in which they have been for months, immediate relief is demanded. What is wanted is action, and not rhetoric, and the sooner the Senate follows the House in passing a repeal bill the better, because it is the course of that body which has been in doubt. Even now the improved chances of favorable action are being discounted. Still, absolute certainty is required to restore confidence, particularly abroad, from whence the contagion of doubt first spread.

It will not, of course, be wise to expect any sudden recovery as the result of the repeal of the Silver Purchasing act. While we believe that our currency policy has been the most potent cause of our distress, it is acknowledged quite generally that other adverse influences have been at work. What their strength really is may become apparent when the silver question is eliminated.

So earnestly and widely has the business community believed that the Silver Purchasing act was responsible for our panic that the feeling of joy and relief must tell upon the tone of business. Our bankers, merchants and manufacturers will proceed as cheerfully as their circumstances will admit to patch up their shattered fortunes and to vigorously, though cautiously, resume their operations, if they are allowed some peace.

Some naughty work is going on somewhere in the copper trade, in spite of the "gentlemen's agreement," which has failed to prevent a decline in prices below the record level. Particularly frequent disregard of what has been "allowed" has characterized the exports from this country. It has been understood that the large producers who are members of the International Pool made the arrangement that the American exports should be kept down to 3333 gross tons per month. Now, some person or persons are unloading on the Europeans at a much greater

rate. April had its record of 3450 tons, May carried it up to 4482 tons, June to 5109 tons and July to 7181 tons, or more than double the quantity allowed. The American production, too, is crowding upward. During the first quarter of the present year it averaged close upon 10,000 tons per month, while during the months of April, May, June and July it came near 13,000 tons per month. It is quite evident that the pool is little more than an association which collects monthly in an admirable manner very valuable statistics.

Unemployed Labor.

In the shifting phases of business life the American people are quite frequently confronted with problems of almost national importance, which must be solved in some way. We seem to have more of these important questions coming up than any other nation, due probably to the great extent of the country, the magnitude of its business interests and the disposition of the people to push forward recklessly in business enterprises. Chances are readily taken which would not be seriously considered by conservative British, German or French business men. The siren song that "this country is so strong that nothing can shake its prosperity" seems to have impressed itself so thoroughly on the people who have been taught to sing it that they think it applies equally well to individual cases. We are now finding that some of these problems which have been solved in the past have been disposed of in very shiftless fashion. Their effects are being seriously felt. Among these effects are some new problems which demand very early and efficient treatment. The most important of these consequential questions is, What shall be done with the unemployed? Their number appears to be steadily increasing, and in some cities demonstrations have been made which excite apprehension among the conservators of the peace. It has been many years since the people of the United States have seen daily processions of the unemployed marching through the streets in order to excite sympathy for their hapless condition. But these processions are now becoming quite a feature of city life, and much as they may be deplored and condemned as leading to turbulence they certainly compel notice to be taken of the fact that workmen are idle and their families need bread.

The committees of citizens that have been organized in some localities to devise methods of alleviating the distress seem to be unable to suggest practicable measures. Public improvements, which will employ many men, are advocated by those who believe that States and municipalities should undertake the work of caring for these unfortunates. They overlook the important fact that retrenchment in such

times as these must be adopted by State and municipal governments, as it is difficult for property owners to raise their customary taxes, and are therefore in no position to carry additional burdens of taxation. Besides, wholesale measures of relief, if adopted by any community, would merely attract large numbers of idle men from other places to share in such privileges. If a plan of this kind could be adopted it would have to be done in concert by almost every State and every community in order that the burden might be equally borne. Charitably disposed persons are finding out for themselves that they cannot restrict their charity to the poor of their own immediate districts, but that applicants for relief will flock from remote distances as soon as the welcome news of the general distribution of alms is heard. Such news travels very fast. It is probable, however, that while citizens' committees are discussing how this sad condition of the poor can be best alleviated, individuals will be hard at work doing the best they can on their own account to help those who come immediately under their observation.

From practical experience the impression is forced upon us that much of the distress now existing among workingmen can be speedily terminated if they should be more reasonable with regard to wages. Improvements of various kinds would be undertaken by men of capital if they had the inducement of low cost offered them. They have faith in the future, look forward to the time when every wheel will again be in motion, and believe that the country will need enlarged facilities whenever the renewal of prosperity occurs. Plenty of such preparatory work would be undertaken even now if it could be done cheaply. Building would also be much more active. Yet estimates of cost show scarcely any shrinkage as compared with a year ago. Materials were so low then that they could hardly be expected to go lower, but some shrinkage is expected in labor in view of the large number of persons unemployed and the disorganized financial conditions. It would seem that under such circumstances as these any standard of wages would be disregarded, and that men with starving families would work 10 or 12 hours a day to get enough to feed and shelter them if the opportunity presented itself. This would not be the forcing of wages down by capitalists, but the selling of labor at the best price it will bring. When there is no demand for any commodity, and the market must be forced, a sacrifice sale is made. This is the time when reasonable men must make sacrifices of their labor if labor is all they have to sell. It is foolish to talk of "the regular scale" or "the regular wages" or "the regular hours" when such conditions absolutely prevent employment. Nothing is "regular" now. The times are out of joint, and men should drive the best bargain they can, making sure, how-

ever, that they are not setting their terms so high that they scare off the other party.

The elements of recuperation are with us in abundance, and only a little time is needed to allow them to grow. Business will not always be depressed, and if wages generally were to be cut in two, as compared with last year, they would not remain permanently on such a basis. The return of prosperity, which will bring with it a renewed demand for labor, will advance the price of that labor as well as of commodities. It is fortunate, in one way, that the convulsion in trade came when it did—in the spring, instead of the autumn. Poverty is more endurable in the summer than in the winter. And there is more than a chance, also, that the turn of the season in the fall will bring an increase in business. The reaction may not be great enough to give everybody employment or to restore the wonted buoyancy to all branches of trade, but it may be sufficiently so to permit many idle enterprises to resume. Their resumption will undoubtedly be greatly helped if idle workmen can be induced to consider "half a loaf better than no bread."

Receivers as Competitors.

The fact that an unusually large number of works, great and small, are being operated by receivers introduces into the iron and steel trades an element which every manufacturer and merchant must take into consideration. The time was when the failure of a corporation or a firm involved either a protracted idleness or a dismantling of its plant. Under special circumstances the creditors made arrangements under which work was continued, but even then a cautious policy was pursued. Then the competition of financially weak concerns was most keenly felt before their collapse.

It is different now. As soon as a plant is in the hands of receivers it appears to become a competitor far more dangerous to its solvent rivals than it was when it was embarrassed. A receiver can make his purchases of raw material and supplies much more readily than the management which he supplanted. Those who hesitated to sell to the struggling concern willingly meet the requirements of the officer appointed by the court.

As a seller the receiver also enjoys advantages. He need not worry over meeting interest charges or continue to shoulder unfavorable contracts. He starts with a clean sheet, and while he is responsible to the court he generally can and very often does make prices which competitors who are meeting all their obligations cannot stand up against.

We do not mean to say that the men who are in charge of plants whose owners have suspended payments are as a class reckless sellers. But it will

be readily understood that cost sheets look very different when interest, allowances for depreciation and similar general charges disappear. So long as the receiver remains within the limits thus drawn by his cost the courts will, as we understand it, sanction his operations.

No one will deny that sympathy is due to those who have been unfortunate. Every one will rejoice in their extricating themselves from their troubles. It is right that every reasonable arrangement be made which will save all or as much as possible from the wreck for the creditors and will restore the property to its owners. But it does seem as though there is some injustice in giving the right of way to the crippled. Solvent concerns should not be subjected to a decidedly unfair competition. They should not be met at every turn by prices which represent merely cost of labor and materials. It should be the duty of the courts, or of persons appointed by them, to protect the community at large, as well as the creditors and security holders of plants operated under their supervision. It should be proven that the receiver is making money in sufficient quantity to provide for an extinction of the debts of the concern in a reasonable time. When he is not doing that, he is taking bread out of the mouths of others who are entitled to more consideration because they have not been extravagant, or injudicious, or unfortunate.

The growing leniency under the receivership system is directly encouraging a refuge to its comfortable shelter as soon as matters become a little squally. Unless some restrictions are placed upon it, our industries will be plunged during every period of depression into a sharper strife, in which the weaker simply resume the struggle after quietly depositing their burdens and forcing others to follow their example.

The clerical force of the Illinois Steel Company, in Chicago, has been reduced over half, as compared with ordinary times. Salaries have been cut from 10 to 40 per cent., taking effect from September 1. It is stated that President Jay C. Morse voluntarily reduced his own salary 50 per cent. For some time the only portions of the company's plant in operation have been the South Chicago works, running on rails, three blast furnaces at South Chicago, and part of the Bay View mill at Milwaukee, running on splice bars and merchant bars. The extent of the depression in the iron trade is perhaps better shown by an enumeration of the idle works, as follows: Two blast furnaces and part of the rolling mills at Milwaukee, two blast furnaces and steel works with structural mill at North Chicago, four blast furnaces and steel works with billet and rail mills at Bridgeport, in the city of Chicago, five blast furnaces at South Chicago and three blast furnaces, steel works, billet and rod mills at Joliet. From the present outlook, there is not only no prospect of starting any part of the idle plant but danger that the works still running may be obliged to suspend operations for lack of business.

CORRESPONDENCE.

The Adams-Blair Direct Process.

To the Editor: We beg the use of your columns for the purpose of giving in a single communication a comprehensive answer to the inquiries of those interested in steel manufacture respecting the present status of the Adams-Blair direct process.

The chief points to be determined as regards this process were these:

1. Can the oxygen of the ore be removed to such an extent that the spongy iron can be employed as a substitute for wrought iron in the open hearth process without trouble from, 1, violent ebullition of the bath, with a too-rapid running down of the carbon therein; 2, destruction of the furnace lining, and, 3, excessive waste of the metal?

2. How small a ratio of pig metal to ore can be employed with due regard to avoiding the above difficulties?

These questions we succeeded in working out to the following results:

With 25 per cent. of pig to 75 per cent. of metallic iron in the ore no extraordinary ebullition takes place on the introduction of the sponge into the bath, and the carbon is run down no faster than would be the case with so much wrought-iron scrap; with a magnesian lining the maintenance of the furnace in working order is not more troublesome nor more costly than in ordinary open-hearth practice, and the waste of the metallic iron in the combined pig and ore can be kept below 12½ per cent.

Having reached this point, we presumed that we should find little difficulty in securing the adoption of the process by the trade, on a scale large enough to establish its superiority.

Finding ourselves mistaken in this, we laid before ourselves the following programme:

To organize a company to build a new plant, expressly and exclusively devoted to the demonstration of the advantages of the process as regards both the cost of production and the quality of the product; the scale of operations not being large enough seriously to disturb the existing steel industry of the country, yet sufficient for introducing the latest improvements in manufacturing appliances, and to put on the market material enough to enable the consumers of steel to discover that they could not afford to continue to use the ordinary steel so long as the new article could be had at anything near the same price. With these points in view we fixed the amount of the product at 10 per cent. of the present output of the steel works of the United States, say 10 per cent. of 20,000 tons, being 2000 tons per day, and to confine the operations to the manufacture of billets.

In order to provide the necessary resources for the building of such a plant and its accessories, representing as it will in its full development an investment of over \$3,000,000, and to secure a suitable site, not simply for these works, but also for such other establishments as may prefer to get close to the billet supply, some considerable time has been spent, during which the process has given no sign of practical progress; but all these preliminaries have at last been satisfactorily arranged and we are now in a position to assure our friends, the steel manufacturers, that they can count upon having the process, without trouble or expense on their part and with the least possible

disturbance of existing conditions, set before them in a shape to enable them, each for himself, and in accordance with the circumstances of his particular case, to determine when and to what extent he will care to adopt the system.

The Ashtabula Steel Company have been organized for the above purpose, and have selected a site for their works, the geographical position of which is peculiarly advantageous for carrying out the object of their construction. They have secured a tract of land adjacent to the harbor of Ashtabula, giving convenient access to the docks of both the New York Central and Pennsylvania systems, thus commanding the best facilities for the bringing in of minerals and the sending out of their product. At this point can readily be assembled in any desired quantity iron ores of every description likely to be employed in steel manufacture in any part of the United States. The Lake Superior region will furnish its various well-known varieties, Canada its titaniferous magnetites, the Adirondack country its high and low phosphorus magnetites and its concentrates, interior New York its Clinton oolites, typical of the prevailing deposits of the Southern States; Western Pennsylvania will send in her carbonates and limonites—both only less interesting to the South than the oolite—and, finally, Ohio will provide, from New Philadelphia, her black band.

Very respectfully yours,

THE STEEL & IRON IMPROVEMENT CO.
PITTSBURGH, PA., AUGUST 24, 1893.

The Regulation of Temperature in the Converter.

To the Editor: Permit me to refer to regulation of temperature in the operation of steel making by the Bessemer process in paragraph 4 of the very interesting article by H. H. Campbell, as published in *The Iron Age* of 24th inst., page 344. It illustrates the refinement of judgment attained in modern Bessemer practice, but may go too far in statements calculated to belittle that important function of metallurgical work technically called steel blowing, if passed unquestioned.

It cannot be doubted that "it is difficult if not impossible to determine the degree of heat attained in melting steel," but that so small an amount of cold steel as 100 pounds, added to a converter charge, will produce a variation in the temperature of the bath that would be perceptible to the naked eye, needs further qualification to assure its acceptance as fact. The weight of the charge under treatment obviously needs to be stated when the weight of the cooling addition is considered, and it is fair to presume that Mr. Campbell had in mind the 8-ton converters of the works to which he is attached when writing as above. It may reasonably be presumed, also, that these converters, like those at all "pushing" works, are operated somewhat above their rating, say to a 10-net-ton capacity, in which case the statement referred to would stand as representing that an addition of 100 pounds of cold steel to a bath of 20,000 pounds would cause a reduction of temperature the phenomena of which would be plain to the naked eye.

From the view point of one who has been in close touch with the Bessemer process since its introduction in America, the steel blower who would claim such delicacy of temperature reading, though having the best appliances to supplement the training of the unaided eye,

would have confidence born of something beyond practical experience. True, the addition of so small a quantity of cold steel would produce an immediate effect that could be seen by even an unpracticed eye, but the momentary effect on the products of combustion issuing from the vessel would quickly disappear, and the preceding phenomena would reappear with a similarity that would demand the best efforts of the skillful blower to note a change of temperature.

The almost universal use of blowing glasses indicates, if anything, the lack of confidence in unaided vision the steel blower has, and, even with his glasses, it is oftener the case than otherwise that he has doubts as to the correctness of his work.

When the iron goes to the converter of practically constant chemical character, with fairly uniform sensible heat, and with no considerable delays in casting and clearing operations, the skillful blower of steel finds little to puzzle him, and results are practically uniform, particularly in the so-called rail steels; but where he has to contend with conditions of irregularity beyond his control, such as irons of varying chemical composition, delays in operations from any cause, and in changing from one class of steel to another—all of which tend to affect the temperature of conversion—his results are sufficiently irregular, from his view-point, to make him quite anxious to receive confirmatory reports from the laboratory and rolling mill.

Where direct metal is supplied the blower's best efforts are demanded and fall far short of his needs. In one of the largest and best conducted of the world's Bessemer shops using direct metal the working organization includes, in addition to the blower, a "scrapper," upon whom devolves the regulation of the temperature of conversion as his chief care. This scrapper has entire control of temperature regulation, but not of the finish of the blow, which latter the blower controls. An order from the scrapper to "set the vessel for scrap"—the quantity of which addition he dictates—or to "side blow the heat" to increase the temperature must be obeyed without question. Four converters are under the charge of this scrapper, two of which are "in the air" constantly. As a school for the unaided eye this scrapper's position has no equal, particularly as it is not uncommon for the silicon content of the metal to vary from 0.50 up to 2.00 per cent. in consecutive heats. He deals with baths of about 40,000 pounds each, and the scrap additions vary from several hundred to as many thousand pounds per heat, with perplexing frequency of extremes meeting. A second and frequently a third addition of scrap is made when first impressions prove erroneous, and occasionally "side blowing for heat" follows scrapping, where the heat has been misjudged to the extent of overscrapping. With the utmost care the results are not uniform, as evidenced constantly by phenomena noticeable in casting operations. The men selected for this important position are the most intelligent to be found that are willing to assume the responsibilities, yet not one of them trusts the unaided eye in judging temperature. Even the use of glasses does not assure a constant or approximately constant temperature approaching the range indicated by Mr. Campbell's few degrees Centigrade.

To make plain the cause of failure to approximate the ideal temperature of

conversion under the heat-affecting conditions to be found in even the best constructed and ablest managed shops would require a lengthy consideration of the *rationale* of the process quite beyond the scope and limits of this letter; but, with the failure of naked-eye blowing everywhere manifest, it might be well to consider the efficiency of the blowing glasses, which alone come to the assistance of the steel blower in his art of judging converter temperatures. They are a valuable auxiliary, but not infallible. They must be supplemented by the blower's ability to compare a conversion to a preceding one of which he has chemical and physical verification of quality. The glasses are all of one general character, but vary considerably in power to obscure light. An interchange of glasses between operatives of the same shop will result in confused judgment until the operator becomes accustomed to the unfamiliar glasses of his shopmate. The Bessemer flame appears, through the glasses, of any tint from light lemon to dark orange, as the temperature may be high or low. A predetermined tint, memorized, is the proper one for the most favorable temperature to meet the requirements fixed by the grade of steel required. The general terms for varying temperatures are cold, cold-medium, medium, hot-medium and hot. Occasionally a higher range of temperature than hot is rated by the use of a very strong adjective qualifying hot and beginning with a big, big D. The term "hot" is a relative one only, for the proper heat is that which will be just high enough to insure clean pouring into the molds; moreover, a heat which would be called hot-medium in a shop making dead-soft steel would be considered a very hot heat in a rail steel shop, and one just right in a rail shop would be entirely too cold for good work if of dead-soft steel. A conversion, then, which comes up in the approved orange-to-lemon tint to suit the purpose in view needs no scrap, but when lemon tints only appear the guess-work begins. A very hot conversion means anything above orange-tinted products of combustion, and when a light lemon tint prevails the heat may require the addition of 1000 pounds or 3000 pounds of scrap, according to how the preceding heat behaved. With very high silicon iron the tint becomes too light for even good guessing; then the scrapper doubles his glasses by putting one pair before another and looking through both, thus bringing a heat of the highest attainable temperature back into orange tints; then, by judging the scrap necessary as if using one glass and multiplying by two, a fair approximate to the medium temperature is attained. The difference in the tint of the flame at varying temperatures is due to a greater or less obscuration of the light of incandescence in the gaseous products by the smoke of iron in combustion; the colder the bath, the greater the combustion of iron and the consequent obscuration of the flame by iron smoke. The unaided eye is lost in these fine distinctions of the glaring flame, and he would be rash indeed who would place any dependence on it where approximately delicate distinction was necessary because of one or more of many influences operating to injuriously affect the quality of the product. A very interesting and valuable series of conclusions might be drawn from the phenomenon of smoke obscuration noted above, "but," quoting Rudyard Kipling, "that is another story."

In the open hearth furnace the temperature conditions differ from those of the Bessemer converter. On the hearth, the melter depends entirely on sensible heat for temperature, having no considerable source of chemical heat, which is the chief one of the Bessemer operator. Under properly energetic operations on the open hearth, the melter seldom has to contend with too much heat, but quite the contrary. He is well satisfied if, when his bath has reached the desired degree of reduction of its metalloids, the temperature is high enough to enable him to take it. With the extremely high temperature of the converter subjected to the varying heat influences noted in the foregoing he has nothing to do. It requires, generally, all the heat of combustion of his fuel the brick work of his furnace will bear to give him enough heat by radiation to complete his reactions and to secure a sensible heat of the bath consistent with clean pouring. Should he get too hot he will have plenty of phenomena plainly visible to the naked eye to forewarn him and to indicate it, not the least in its effects on him being the "reaction of the office" relative to his destructive use of the appliances.

Too much importance cannot be given to the consideration of the effects of varying temperatures on the quality of any class of steel. Too little study is, unfortunately, the rule. So that the blower has enough heat to carry his steel safely to the molds, he attaches slight importance to the effects of an excess. Taking as his sole guide for finishing the carbon flame, he turns down the conversion under rules of his own making. The "proof of the pudding" is his guide. Should the steel roll well he is content. The largest percentage of No. 1 rails is his ambition. Whether the rail is a No. 1 worthy of the term in its highest significance or whether it be one which passes the inspector's eye by a very narrow squeak matters not. It is only when physical tests show great qualitative differences in steels having identical chemical constitution that he feels there is still something to learn beyond complying with the generally elastic requirements of the rolling mill and laboratory. Is he encouraged to investigate, to improve his practice, by representing to him that the most delicately sensitive element, and the one having the heaviest bearing on the physical characteristics of steel, is so completely in control that he can observe with his unaided eye the influences of one-half of 1 per cent. additions to a conversion?

At one of the largest American steel shops the cupola charge is made up with sufficient care to avoid the necessity for vessel scrapping. The blown charges, being heavy, are not sensible to small changes in the chemical composition of the metal, and the results, thanks to the tether given the steel maker by natural laws governing pneumatic conversion and to the leniency of physicists, are quite as satisfactory as if the technician in charge made a hot mix at the cupola and depended on the judgment of temperature and its control by his very practical steel blower. Another of the large American works failed after years of study and expensive experiments to determine just what ailed the iron, which unaccountably persisted in producing both the very best and very worst steels, having identical chemical composition and general treatment. It was only a case of improper converter treatment at the temperature. Iron is becoming less of a scapegoat for deficiency of technical knowledge, but is

still useful to that end. The superintendent of a large Bessemer shop once remarked to the writer: "Look at those analyses. Do you see any reason why that steel should be as brittle as glass? The analyses show all right. I have blown that iron hot, medium and cold; have finished the heats young and medium and full; have tried every variation of treatment I could think of and still the darned stuff is brittle. It is the nature of that iron to make brittle steel, and brittle it will be in spite of sheol." It was simply another case of improper treatment at the conversion temperature.

Notwithstanding the delicacy of the ocular determinations referred to by Mr. Campbell, one cannot enter a Bessemer shop without one's first glance going toward the converter to know how she is blowing as regards temperature. That is the chief variety which spices the life of the shopman, whether he be fore hand or any one else down to the clean-up. They are all "on to it," for it affects their labors very materially. The nozzle and stopper fusing of the ladlemen and the burnt molds and stools of the pitmen plead eloquently for greater ocular delicacy on the part of the metallurgist of the shop when he underrates the temperature; and the ladle-skulls and prickered nozzles join the messed molds and slobbered up pit in anathema of the eyes of the person who has miscalculated the "refrigerating effect" of the additions, or of other heat-absorbing influences.

Examples of indifference to the importance of or inability to control temperature are manifest in nearly every Bessemer shop. The scientific societies avoid its consideration. Shall the possibilities of pneumatization be considered limited to the measure of our present real, not ideal, practice? Shall we rest content that we know it all? When Mr. Campbell claims a more uniformly homogeneous steel from the open-hearth than from the converter, while admitting that this is due to irregular practice rather than the method, should not that, if true, lead to careful revision of Bessemer shop irregularities of practice? In the rush and roar of quantitative production must the qualitative features be neglected to the extent of having the products of the converter take rank after those of the open hearth from metals of equal character? If ninety-nine hundredths of good product can be low-classed from association with one-hundredth of inferior steel, should we rest content with the classification, or bring the quality of all product of the converter to rank with that of any kindred process by giving the necessary attention to this important matter of temperature?

The converter has narrowed the field of the acid open hearth until the latter's superiority is noticeable only in the make of steels of the hardest grades. A little more refinement in converter practice will drive the open hearth into basic operations exclusively; but not while we boast of refinements not attained. Until we subjugate temperature or learn to make fine steel under high heat conditions there is no hope for homogeneity of product from the converter to equal that of the open hearth, while the realization is only a matter of intelligent conformity with well-established requirements. JNO. E. FRY.

5417 PENN AVE., PITTSBURGH, PA., August 25, 1893.

Nova Scotia produced last year 1,942,782 tons of coal and 75,000 tons of iron ore.

OBITUARY.

HAYWARD A. HARVEY.

Hayward Augustus Harvey, inventor of the Harvey process for steel armor plates, died at his home at Oange, N. J., on Monday, August 28, from diabetes. Mr. Harvey, who was the son of Brigadier-General Thomas W. Harvey, was born at Jamestown, N. Y., January 17, 1824. He received his education at the Academy in Poughkeepsie and at New Paltz, and came to New York in 1844, entering the office of the New York Screw Company as draftsman. Here he remained until 1850, when he went to Somerville, N. J., to take charge of a wire mill at that place. His father, from whom he inherited his ability, was one of the founders and first presidents of the American Institute, and built most of the cotton mills and machine shops in Central New York during the early part of the century. General Harvey was president of the Harvey Steel & Iron Company, which concern young Harvey joined in 1852. Two years later, on the death of his father, he founded the Wamum Steel Company of Cincinnati. He founded also the Continental Screw Company of Jersey City in 1865, with a new line of patents for the manufacture of wood screws, which concern was afterward absorbed by the American Screw Company. In this field Mr. Harvey entirely revolutionized the production of screws, both at home and abroad. But the invention on which his fame will chiefly rest was the process of hardening steel known by his name, for which the first patents were taken out in 1888. The importance of this discovery in connection with the production of armor plates was at once felt, and the first practical armor plate treated by the process was made in 1890. It has been adopted by the United States Government and by all the armor-plate makers of Europe. Altogether Mr. Harvey took out nearly 125 patents. He was president of the Harvey Steel Company, with works at Brill station, near Newark, and vice-president of the American Washer & Mfg. Company of Newark.

J. H. DEMMLER.

J. H. Demmler, the founder of the works of the United States Iron & Tin Plate Mfg. Company, at Demmler Station, a few miles from Pittsburgh, died on Saturday, the 26th inst., at the residence of his son-in-law, F. E. Schenck, in the East End, Pittsburgh. Mr. Demmler was in the 85th year of his age, and his death was due to general debility. He was born in Germany, but came to Pittsburgh early in life and for a number of years conducted a tin store on Liberty street in that city.

JOHN S. M'CLURE.

John S. McClure, president of the Moseley Iron Bridge & Roof Company of 5 Dey street, New York, died at his residence in Brooklyn August 26, aged 79 years.

At Pittsburgh a permit was issued last week to Mrs. Lucy C. Carnegie for a building to cost \$480,028. This building will be located on Fifth avenue, between Smithfield and Grant streets, and when completed the general offices of the Carnegie Steel Company, Limited, will be located in it. It will be the tallest building in Pittsburgh, being some 13 or 14 stories high.

MANUFACTURING.

Iron and Steel.

Spaulding, Jennings & Co., West Bergen Steel Works, Jersey City, N. J., advise us that the statement printed to the effect that their works had closed down indefinitely is incorrect. A portion of the works was closed down during the first three days of last week, but operations were resumed last Thursday. They expect that they will continue to work on full time.

Cleveland Rolling Mill Company have started up about one-half of their plant and it is stated that they will soon be giving steady employment to fully 3000 men.

Superintendent Stevenson of the New Castle Wire Nail Company, New Castle, Pa., is having his full share of labor trouble. While negotiations were pending with the Amalgamated Association the laborers at the nail works struck. The strike was short lived, plenty of common laborers being in the vicinity eager for work.

As yet no conference has been held between members of the firm of the Brown, Bonnell Iron Company of Youngstown, Ohio, and the officials of the Amalgamated Association. M. M. Garland, president of the Amalgamated Association, was in Youngstown recently and an informal talk was held between him and some of the workmen in the employ of the Brown, Bonnell Company but it is not regarded as a conference.

The works of the Tyrone Iron Company at Tyrone, Pa., manufacturers of charcoal, iron and steel boiler tube skelp, have been idle for about a month on account of the depression in the iron business and the quiet money market. During the shut down repairs have been made to their rolling mill engine and other machinery. As yet the date of resumption is uncertain.

Referring to the judgment secured in the United States Circuit Court at Cleveland, Ohio, against the Cherry Valley Iron Works of Leetonia, Ohio, we have the following information: In the fall of 1888 the Cherry Valley Iron Works contracted with Tod, Stambaugh & Co., agents of the Florence Mining Company, for 10,000 tons of Florence ore, to be of standard quality and same as had been purchased from them in previous years. After using a portion of the ore it was found that the percentage of iron was running down two or three points from what the contract called for and what the ore had formerly analyzed, and immediately notification was sent to Tod, Stambaugh & Co. that no more ore would be received on the contract, owing to the above facts. Up to the time the firm declined to receive any more ore they had overpaid their contract about \$5000, and suit was commenced to recover this amount. In answer to this suit it was alleged that Tod, Stambaugh & Co. went on and sold the ore to the best advantage they could and charged the account of the Cherry Valley Iron Works with the difference. Judge Ricks, after holding in abeyance for several months after the case was argued, gave judgment for the plaintiff for a little over \$300, instead of \$1038 30, as has been stated in several publications. The lawyers of the Cherry Valley Iron Works claim that the judge's rulings were not in accordance with the facts and evidence, and have given notice of appeal in the United States Court, and believe that the decision will be reversed.

Last week the Lockhart Iron & Steel Company, operating Vulcan Forge & Iron Works, at Chartiers, near Pittsburgh, started up their plant without signing the Amalgamated scale. The muck mill, with eight puddling furnaces, was first started up, and a much larger number of men could have been put to work had the firm so desired. They prefer, however, to go a little slow and not start up more fully than the condition of trade will justify. In addition to this the firm wish to give their old workmen a chance to return to work if they so desire. This concern propose to pay scale wages, but will not sign the scale, nor recognize the Amalgamated Association in any manner, and in the future will deal directly with their employees.

As stated in *The Iron Age* of August 17, the stoppage of operations at the works of Wallace, Banfield & Co., Irondale, Ohio, was only temporary. There were some slight differences to be settled between employers and employees which are now amicably adjusted, and the plant is running full swing. Press reports throughout Ohio

to the effect that these sheet mills and tinplate works were closed down indefinitely had no foundation.

Reports published in *The Iron Age* recently regarding the prospects and condition of affairs among the rolling mills at Muncie, Ind., are verified by later advices. The Midland Steel Company's plant is running to its full capacity. The Darnell mill, operated by Muncie Iron & Nail Company, is running in accordance with prevailing weather. During the intense heat three heats to the turn is the rule; full time will be made as soon as the weather permits. The 10-inch mill at the Indiana Iron Company's plant has undergone extensive changes; two new regenerative furnaces have been built and improvements made in the general arrangement of the mill. In the muck mill new rolls have been put in and the roll train has been thoroughly overhauled and lined up. The nut and bolt shop connected with this plant, which employs about 300 men, boys and girls, is ready for operation as soon as the order is given. Instructions to resume operations in all departments are expected at any time. The start at the works of the Irondale Steel & Iron Company, Anderson, in the same district, was successful, and the mills are running full time. Robert M. Stevenson, formerly superintendent of the Britton Iron & Steel Company, Cleveland, Ohio, is now connected with the Midland Steel Company, Muncie, Ind.

Last week the Duquesne Tube Works Company of Pittsburgh, with works at Duquesne, Pa., put about a dozen men at work cutting some unfinished pipe, and as soon as this was completed the men were laid off. As yet it is very uncertain when this plant will resume operations, the matter of resumption depending altogether upon the demand for pipe and the condition of the money market.

The plant of the Findlay Rolling Mill Company, at Findlay, Ohio, manufacturers of bar iron, has been in partial operation right along since July 10, the firm paying their men in checks. About September 1 the concern expect to start up all departments full time, and in addition will be put in operation their tool and chain departments, which have been closed down for some time undergoing repairs.

The Trinidad Iron & Steel Company have been incorporated in Colorado, with a capital stock of \$50,000.

Last week the Linden Steel Company of Pittsburgh, who had already gone into the hands of a receiver, made a voluntary assignment. The deed of trust is from W. J. Lewis and Henry Lloyd and wife to the Fidelity Title & Trust Company of Pittsburgh. It states that the Linden Steel Company are indebted to the holders of their promissory notes made in April, May, June and July, and running from four to six months. The aggregate amount of the notes is \$206,782 89. The Linden Company cannot pay the notes, and W. J. Lewis and Henry Lloyd, who indorsed them, will become liable for the payment. The holders of these notes agreed to extend the time of payment of them or as much of them as the Linden Steel Company will not pay. The holders of the notes appointed as their committee T. B. Atterbury, Wilson A. Shaw and B. F. Wilson, and the committee selected the Fidelity Title & Trust Company as trustee, to whom the obligation or bond is given. It agrees that W. J. Lewis and Henry Lloyd and wife are bound in the sum of \$300,000 for the payment of the notes of the Linden Company indorsed by them. Payment is to be made as follows: 20 per centum of the amount in 12 months from date and 10 per centum every six months thereafter until the whole is paid. Interest is to be paid with each installment. In case the Linden Steel Company should get an extension, the new notes issued for the ones in question were to be paid at maturity. The bond is secured by a mortgage for the amount on the private properties of Mr Lewis and Mr. Lloyd. It is stated that the object of the firm in making an assignment is to protect the assets of the company for all the creditors and to prevent an issuance of foreign attachments.

The works of the Pittsburgh Forge & Iron Company, located in Allegheny, Pa., are still idle, with no immediate signs of resumption. This firm have always signed the scale of the Amalgamated Association, but up to this time have not attached their signature to it.

Notices have been posted in the various departments of the plant of the Pennsylvania Steel Company, at Steelton, Pa., stat-

ing that a reduction of 10 per cent. in wages will take effect on and after September 1. The order is a general one, and affects all classes of workmen.

Moorhead, Brother & Co. of Pittsburgh, operating the Vesuvius Iron & Nail Works, at Sharpsburg, Pa., have closed their plant down for an indefinite period.

The employees of the Carrie Furnace Company, at Pittsburgh, operating Carrie Furnaces, at Rankin Station, Pa., have been notified of a reduction in wages varying from 10 to 20 per cent.

Last week the Eagle Iron & Steel Company of Ironton, Ohio, signed the Amalgamated Association scale.

Spearman Furnaces of the Spearman Iron Company, at Sharpsville, Pa., have been banked down temporarily until there is an improvement in the demand for pig iron. The same is true of Mabel Furnace of Perkins & Co., Limited, at the same place. Douglass Furnaces, Sharpsville Furnace of the Sharpsville Furnace Company, and Claire Furnace of the Claire Furnace Company, Limited, all at Sharpsville, Pa., have also been idle for some time. But one furnace is now in operation at the above place, it being Alice Furnace of the Wheeler Furnace Company.

We have already noted the fact that operations at the ore mine of the Valentine Iron Company, at Bellefonte, Pa., have been suspended. Last week the blast furnace of this concern, at the same place, was also closed down for a temporary period on account of the existing depression in the iron business.

At the Bessemer plant of the Hainsworth Steel Company, located in Pittsburgh and which has been idle since the expiration of the scale on June 30 last, notices have been posted notifying the men that operations will be resumed about September 1. The notice also states that applications for positions will be received by the firm from their workmen as individuals, but that no labor organizations will be recognized. This concern is an identified interest of the Oliver Iron & Steel Company, and it is reported that when the different works of the concern are ready for operations they will be started up with non union men. The Amalgamated Association will not be recognized, nor will any scales be signed.

At Apollo, Pa., P. H. Laufman & Co. are running their sheet mills and tinplate works to full capacity. Operations are temporarily suspended in the mills of the Apollo Iron & Steel Company. The steel works are in operation.

At Canonsburg, Pa., the works of the Canonsburg Iron & Steel Company are in operation, with the exception of No. 1 tin mill. The old black plate mill has been running steadily for the past six weeks and the puddlers have worked part time. The two sheet mills were started up last week.

The Morris-Bailey Cold Rolled Steel Company will shortly move their works to Wilson Station, near Monongahela City, Pa.

The intimation thrown out in a correspondence from Central Ohio that the furnace of the Penn Iron & Coal Company of Canal Dover, Ohio, is running is incorrect. The furnace was banked on July 25, and is still idle.

The McCullough Iron Company's plant at North East, Md., was put into entire operation this week, with 300 men, after a short spell of only partial work.

The Brazil Rolling Mills, Brazil, Ind., have resumed operations.

Sloss Furnace No. 2, Birmingham, Ala., made a record recently by producing 980 tons of foundry iron in seven days.

As the result of a conference held between the management of the Eagle Iron & Steel Works, Ironton, Ohio, and their employees, an agreement was come to by which the works were enabled to resume operations. The firm offered the men payment with checks dated 90 days ahead, which proposition was accepted by them.

It is stated that the Birmingham (Ala.) Rolling Mills have relinquished the idea of removal to Louisville.

Rockwood Furnace No. 2, Rockwood, Tenn., was blown out the latter part of last week and work at the mines stopped for an indefinite period. Work on the new furnaces now in process of construction will, however, be continued.

Little Belle Furnace of the Tennessee Coal, Iron & Railroad Company, at Bessemer, Ala., blew out last week. This leaves three furnaces in operation at Bessemer.

The Penn Iron Works, Lancaster, Pa., which have been idle since July 1, have resumed operations with a force of 300 men. The concern are said to have on their books sufficient orders to enable them to start every department of the works.

The blast furnace at the Central works of the Cleveland Rolling Mill, Cleveland, Ohio, has gone out of blast.

The Rolling Mills of P. Hayden & Sons, Columbus, Ohio, resumed operations last week after a temporary shut down owing to a dispute over the wage scale, which has been amicably adjusted.

The spike mill of the Tudor Iron Works, East St. Louis, Mo., resumed operations last week.

Most of the departments of the Pennsylvania Bolt & Nut Works, Lebanon, Pa., are closed down for the present week, and notices of a reduction of wages in the rolling mill departments and puddle mill have been given.

Difficulties between the Indiana Iron Company of Muncie, Ind., and their employees will, it is expected, be shortly adjusted and the mill resume operations.

The Darnell Iron Company, Muncie, Ind., recommenced operations last week.

The Bellaire Nail Works, Wheeling, W. Va., will, it is reported, recommence operations about September 5.

A press dispatch of August 29 announces that the York Rolling Mill, York, Pa., with a running force of 300 men, has closed down indefinitely.

Everett Furnace, of Jos. E. Thropp, at Everett, Pa., was blown out on the afternoon of August 22. During the shut down of the furnace it will be relined and repaired.

Machinery.

The works of the Buffalo Edge Tool Works, at Ridgway, Pa., have recently been started up for the manufacture of tools and axes of various kinds, the concern making a specialty of the manufacture of planing-mill knives and meat-cutting machine knives. They advise us that they have sufficient orders on hand to keep their works running full time for the next six months, and are now giving employment to about 20 men, and expect to increase this force in the near future.

A. G. Morris is erecting a very large and complete foundry and machine shop at Tyrone, Pa.

Russell & Co., Massillon, Ohio, are now employing 100 men, and it is expected that this number will be increased shortly.

The works of the Geiser Mfg. Company, located at Waynesboro, Pa., manufacturers of road locomotives, portable engines and agricultural machinery, have been closed down temporarily. The firm expect, however, to resume operations not later than October next and get out stock for the coming year. They report trade for the first six months of this year as being very good, and collections on the same as being prompt and as good as usual.

The New Process Twist Drill Company, Taunton, Mass., began operations again last week after a brief shut down.

R. H. Carlisle, John N. Lehr and T. S. Knight, appraisers of the Avery Stamping Company, Cleveland, Ohio, have made the following report: Real estate, \$35,000; buildings, \$53,378; construction, \$136,493.80; dies, \$64,000; patterns, \$3000; patents, \$4500; merchandise, \$50,769.57; accounts and bills receivable, \$71,763.92; total appraisement, \$418,904.79. The liabilities are \$292,930.91.

The Eynon-Evans Mfg. Company of Fifteenth and Clearfield streets, Philadelphia, manufacturers of injectors, extra heavy valves and other goods, commenced business in July of last year, since which time they have worked up a large trade. Additions to their buildings and plant have recently been made. Their brass foundry occupies the whole of a building 57 x 40 feet and has a corerom adjoining it 20 x 20 feet. The foundry has just been equipped with a Craig Ridgway crane of 7000 pounds capacity. A two story brick building contains the machine and finishing shops on the ground floor, 57 x 37 feet, and in a wing 36 x 22 is being installed some new machines as fast as they can be built. Ample office and drafting room accommodation is also obtained on this floor. The upper story contains the stockroom and pattern shop. Coal and coke sheds and the engine and boiler house are in close proximity to both buildings. The

engine is rated for 50 horse-power, but the capacity of the boiler is much greater, as it is used for the purpose of testing injectors, valves, &c., under high pressure. The company have recently patented and placed upon the market the Eynon-Korting compound injector, in which they claim may be found some important improvements. The manufacture of extra heavy globe and angle valves, forms the bulk of the company's present business. These valves are manufactured with a view to meeting the demand for high-grade valves, and are sold under the company's trade-mark and a guarantee as to quality and service. The company enjoy a good trade in brass, phosphor and manganese bronze castings, varying in weight from $\frac{1}{4}$ to 5000 pounds. They also manufacture anti-friction metals, blowers, ventilators, blast nozzles, exhausters, condensers, hydraulic and special machinery, water pyrometers, car boxes, brass syphons, acid syphons and blast-furnace supplies. About 25 hands are at present employed, but it is expected that this number will be considerably augmented in the near future. The officers of the company are Rollin H. Wilbur, president; Thos. M. Eynon, M.E., manager, and Thos. Evans, secretary and treasurer.

Jenkins Bros. of 71 John street, New York, recently received a letter from a customer in Brazil, who said that he had found the globe, gate and angle valves used by him were higher in quality than claimed by the makers. He had used the Standard packing, also furnished by Jenkins Bros., in packing the joint in a steam dome which had always given much trouble. This packing worked perfectly, and the correspondent thought it "worth its weight in gold."

Springfield Drop Forging Company, recently organized and under the management of J. L. Moore, formerly with J. C. Spiers & Co., have erected a new factory, 130 x 40 feet, with an extension 30 x 30 feet, at Brightwood, Mass. A general drop forging business will be done.

A pleasant instance of good feeling between employers and employed was shown recently at the works of the Deane Steam Pump Company, Holyoke, Mass. The works of the company have been running for some time but five days a week, and a few days ago the firm decided to further reduce the working days to three, owing to the difficulty of obtaining money to pay their men. The workmen thereupon waited on a member of the firm to signify their willingness to go on working five days at three days' wages until better times. The firm, while refusing the offer in its integrity, allowed the men to continue the five days' work, saying to them that they would make every effort to pay them weekly for the full time.

Atlas Engine Works, Indianapolis, Ind., are reported to be gradually increasing their force of workmen. Last week ten carloads of engines were shipped by the concern to various points.

The Keystone Forge & Machine Works, Harrisburg, Pa., has been reopened by Wm. H. Beckley and J. C. Harvie, who will undertake all kinds of machine work and repairing.

The Midland Mfg. Company, North Topeka, Kan., are making some improvements in their plant, remodeling the buildings and adding a brass foundry.

The Atherton Machine Company, Lowell, Mass., shut down for last week.

Joel Knapp & Son, machinists, Lowell, Mass., are reported full of work, with orders ahead that will insure the activity of their works for a long time to come.

An increasing volume of business has obliged Baker & Shevlin, iron founders, Saratoga Springs, N. Y., to make a large addition to their plant, which will render it one of the largest foundries in Northern New York, and add materially to the facilities of the firm. The new structure, which is approaching completion, consists of a two-story building, 160 x 50 feet, which will be used as a machine shop and wood-working and pattern room; and a wing, 70 feet long, for storerooms and erecting room. Baker & Shevlin are also remodeling their original establishment and installing new machinery. The concern have a successful branch in operation at Schuylerville, N. Y.

Henry B. Hayden will start an iron foundry at Mechanics Falls, Maine.

Ferracute Machine Company, Bridgeton, N. J., have reduced the wages of their employees 10 per cent. on account of the depression of business.

Griswold Mfg. Company's factory, at Erie, Pa., has been running right along with plenty of orders. A part of the machine shop and molding room were shut down for a few days, in order to make some alterations in fittings, which gave rise to an unfounded report that the entire establishment had suspended operations.

The Phoenix Iron Works, Meadville, Pa., shut down temporarily last week.

The Morgan hammer shops, at Alliance, Ohio, which had been idle for some time, have been again put into operation.

A new foundry attached to the Pettie Machine Works, Newton, Mass., has been lately put into operation.

The foundry connected with the Franklin Machine Company, Providence, R. I., has been closed indefinitely.

Charles Buck Edge Tool Company, Millbury, Mass., started their works in full operation August 28, on completion of some extensive additions lately made to their plant.

The new iron foundry of H. T. Merriam, Millbury, Mass., will produce its first casting this week.

The Eagle Machine Company, Lancaster, Ohio, started up again on Monday with a full force after a shut down of two weeks.

Sullivan Machine Company, Claremont, N. H., will shut down for repairs.

On his own petition Isaac W. Frank of Pittsburgh has been discharged as receiver of the Lewis Foundry & Machine Company of that city. John Lewis, the chairman of the Lewis Foundry & Machine Company, has purchased the interests of Isaac W. Frank and Edward Kneeland, thus doing away with the necessity for a receiver.

The Star Machine Company, Buffalo, N. Y., have gone into the hands of a receiver. Although the nominal assets of the concern are said to exceed their liabilities, they are of such a nature as cannot be readily converted into cash, and many of the liabilities are now due.

Miscellaneous.

The large buildings of the Whiteley Mal-leable Iron Works, Muncie, Ind., are reported to be nearing completion. The plant when completed will be one of the finest in the city, and will give employment to a large number of persons.

Interchangeable Tool Company will build a factory 200 x 50 feet at Utica, N. Y., and expect to be ready for operation by January 1, 1899, with a staff of 150 men.

The Portland Foundry & Machine Works have purchased the foundry stock of the Dirigo Heater Company of Portland, Maine. The Dirigo Heater Company have given up foundry work as a specialty and will confine themselves solely to turning out their special branch in the heating line.

Moline Scale Company, Moline, Ill., will start up about September 1.

Benson's brass and silver rolling mill, Bloomfield, N. J., has closed down indefinitely.

The factory of the Lalance & Grosjean Mfg. Company, at Woodhaven, L. I., was started up again this week after a briefer shut down than was anticipated. The establishment will be run on half time for the present.

The Michigan Peninsula Car Shops, at Detroit, Mich., were shut down on Saturday for a period not to exceed three months. The shops are reported to have a capacity of 100 cars daily, and a large staff of employees are thus thrown out of work.

The Salem Mineral Wool Company have been chartered by John A. Bartlett of Roanoke, Va., and others, to build and operate a mineral wool plant at Salem, Va.

The Massillon Bridge Company, Massillon, Ohio, are employing their full force of men full time and have enough contracts entered to run their works steadily during the remainder of this season.

The Wagner Car Shops, East Buffalo, N. Y., which have been working only four days a week during the summer, will resume work on full time on September 1. The shops employ 500 men.

The limit of allowance of drawback on imported lead used for solder has been reduced from 3 pounds per 100 cans to 2.465 pounds per 100 cans.

TRADE REPORT

There seems to be quite a general determination to take a brighter view of the situation. That in itself is a very good beginning, but it is likely to cause a reaction, unless there is an early appearance of convincing evidence in its support. Such evidence is not wanting, but it must be frankly confessed that it is not as yet very impressive. It is not fair to expect it. Recovery is bound to be disappointingly slow to the sanguine, while entirely satisfactory to those who look forward to an expansion of consumption by small increments rather than by sudden calls for large quantities.

The fact that quite a number of mills are starting up is in itself evidence that there has been some accumulation of orders and considerable clearing up of stocks. The fact is noted, too, that inquiries are beginning to come in and that there are occasional indications of a speculative interest, though it is still very timid.

The most encouraging news thus far comes from those departments of the trade in which the bulk of the product reaches consumers in relatively small quantities, and where, therefore, jobbers and merchants are a more important factor.

That part of our industries which relies upon the railroads as purchasers is still suffering from an unprecedented lack of orders. In engineering work and in the architectural branches there is a somewhat better demand, but as yet it has not reached even a modest volume, while the future is clouded by the fact that the building season has only a few more active months.

In Chicago some large season contracts for Soft Steel Bars have been closed. The Western Pipe mills have captured some fair orders for natural gas lines and the Wire trade generally displays growing activity and is enjoying a tendency toward brighter values.

The metal trade, always more mercurial than the greater Iron trade, records some refreshing advances. The surplus of Copper seems to have been worked off for the present, there having been large export sales, so that now the lowest prices made cannot be duplicated. Tin has climbed to 19.25¢, and the impression is growing that the heavy stock is held by parties who need not double up under the burden. Lead has secured a clear advance of $\frac{1}{4}$ ¢ in a fortnight, but Spelter is still dragging along at very low prices.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., August 29, 1893.

The condition of the market hardly admits of any extended comment, as the entire situation is stated when we say that business is scarce and that prices show no improvement. Still, there is a kind of vague impression that things are on the mend, and a very decided conviction that they have seen the worst. There is a good general inquiry for quotations on almost everything, and some sales are being made, but not in large lots, as no one feels inclined to buy more than they can pay for, and for that matter sellers are equally conservative in accepting business. The fact that nothing unfavorable has turned up during the past two or three weeks is considered a good feature, and it is hoped and believed that business is beginning to assume its normal condition. The shock has been too severe to warrant expectations of any important recovery this year, but there are indications of "piecing out and filling up," which show that stocks are at a low point, and however long it may be before there is a demand on a large scale for new work, there must be, as there is already, a necessity for picking up odd lots, which will at any rate give something for the mills to do, and prevent any such stagnation as we had during the first six weeks of mid-summer. On the whole, it is felt that the past week has been more cheerful than any we have had for some time, and while there is nothing brilliant in the outlook, the tension is considerably easier and the trade more inclined to take hopeful views of the situation.

Pig Iron.—The demand is chiefly for small lots, which, as a rule, are taken at quoted rates. Large lots are not inquired for to any extent, so that the only way of realizing on such is to make an extremely low quotation, so low, in fact, that no holder would make it unless under great financial stress. Such instances are met with once in awhile, but the general situation shows that stocks are in pretty strong hands, and although there is not much promise of a materially better market, the output has been reduced to a point which makes it reasonably certain that stocks will not accumulate, even under such a comparatively light demand as we are now having. The expectation is that the demand will soon begin to show improvement, but in any event prices are not likely to go lower. General quotations are about the same as last week. Small lots command pretty close to asking prices, but for spot cash, or under conditions specially favorable to the seller, 25¢ to 50¢ less would not be considered extreme concessions. Ordinary time sales are usually at about \$12 50 @ \$13, delivered, for Gray Forge. \$13 @ \$13 50 for Plain No. 2. \$13.75 @ \$14 25 for No. 2x and \$14 50 @ \$15 for No. 1x.

Muck Bars—Offered at \$22 50 @ \$23, delivered, but there is no demand.

Steel Billets.—Consumers appear to be independent of new purchases, although Western Steel is offered at \$22 75, delivered. A few small lots have changed hands at \$22 75 @ \$23, but bids for large lots are not to be had at figures likely to be acceptable to makers. It is thought that \$22 50 for a first-class order would probably find takers, but it would depend a good deal on what kind of settlement was offered.

Finished Material.—The market has a better appearance than it has had for

some time past, although it is neither active nor strong. There is more inquiry, however, and more small orders around, besides better specifying on old business, so that on the whole the mills are doing better than for some weeks past. But there are no large orders in prospect, and the most that can be hoped under present conditions is more small orders, and possibly the resumption of negotiations on work that was postponed because of the change in the financial situation. Prices are very weak, and three orders taken to-day (the entire lot aggregating less than 400 tons of Shell and Flange) were accepted at less than the lowest quotations hitherto made on ordinary Tank Steel. These were considered specially desirable orders, however, and as two Pittsburgh concerns were the chief competitors price was not much of a consideration, the point being to see that the other fellow did not get the business. General quotations are about as follows, but in such cases as above mentioned $\frac{1}{10}$ ¢, $\frac{1}{16}$ ¢ or $\frac{1}{20}$ ¢ of a reduction is not considered of much account:

Grooved Skelp, delivered.	1.50¢	@	1.55¢
Best Refined Bars.....	1.55¢	@	1.60¢
At interior points.....	1.50¢	@	1.55¢
Tank Steel.....	1.65¢	@	1.70¢
Heavy Plates.....	1.70¢	@	1.75¢
Shell.....	1.80¢	@	1.90¢
Flange.....	2.00¢	@	2.20¢

Old Material.—Market dull and prices very irregular, and largely contingent upon the necessity to realize. Time sales about as follows, but spot cash secures liberal concession:

No. 1 Wrought Scrap, delivered.....	\$13 00	@	\$14.00
Machinery Cast, delivered.....	11.00	@	11 50
Heavy Steel Scrap, delivered.....	14.00	@	15.00
Old Iron Rails, delivered.....	16.50	@	17.00
Old Street Rails, delivered.....	18.00	@	18.50
Wrought Turnings, delivered.....	10.00	@	11.00
Cast Borings, delivered.....	7.00	@	7.50
No. 2 Light Scrap, new....	8.00	@	8.50
No. 2 Light Scrap, old....	6.00	@	7.00

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, August 30, 1893.

Pig Iron.—There is very little doing in Southern Coke. Large companies, however, are standing firmly on the prices given their agents here and are turning orders down rather than make a further cut. Local Coke is in no better demand, but collections are remarkably good considering financial conditions. A very large Iron house reports cash collections for the past month amounting to nearly 50 % of the entire business transacted. This is a very good showing when so many consumers are asking extensions. Inquiries noted for the past two or three weeks are not developing much business, as the people making them are either looking for bargains or else simply inquiring to keep posted on the course of prices. The Malleable Casting syndicate appear to have picked up enough odd lots to satisfy immediate requirements and are not negotiating for anything further in Lake Superior Charcoal, and the expected heavy purchases have faded from the vision of sellers. Quotations are as previously reported, subject to concessions for prompt cash and immediate shipment.

Bars.—The heaviest business done during the past week was in large season contracts for Soft Steel Bars. One of them amounted to several thousand

tons and was captured by a Western mill. Further contracts of the same character are in immediate prospect. Within the past few days there has also been a decided increase in inquiries and orders for Bar Iron, and some manufacturers report their business better than for a month or more. Quite a number of consumers who do not make season contracts have been found willing to anticipate their wants for a reasonable period. The mills that are now running get the benefit of this business. Prices are about the same as previously reported on anything coming up for reasonably early delivery, say 1.45¢ @ 1.50¢, Chicago, half extras, for Bar Iron and 1.60¢ @ 1.65¢ for Soft Steel Bars. The valley mills seem to be very firm at about 1.50¢, Chicago, on Bar Iron and 1.60¢ for Soft Steel. Jobbers are somewhat disappointed in the demand from manufacturing consumers. The large manufacturers are not buying from stock as much as had been expected. Prices are held up, however, and quotations now range from 1.65¢ to 1.85¢ for small lots of Bar Iron and 1.70¢ to 1.80¢ for Soft Steel.

Merchant Steel.—Considerable business has been done in season contracts and more are coming up. The month of August seems to have been the culmination of the contract season in the Agricultural Implement trade, and lately these concerns have been coming in with a rush. Quite a cheerful tone prevails in the Merchant Steel business in consequence of the large tonnage which has been secured as a basis for the future. Prices are maintained on mill shipments, Chicago delivery, as follows: Smooth Finished Machinery Steel, 1.90¢ @ 2¢; Open Hearth Spring and Smooth-Finished Tire, 2¢ @ 2.10¢; Iron-Finished Steel Tire, 1.70¢; Ordinary Tool Steel, 6¢ @ 7¢; Special Tool Steel, 12¢ and upward.

Rails and Track Supplies.—The better inquiry for Steel Rails which was noted last week has continued, but not much business has so far resulted from it. The South Chicago works of the Illinois Steel Company will be shut down about September 15 unless there is a decided change in the situation. Prices continue at \$30 @ \$32 for Rails, 1.60¢ @ 1.65¢ for Splice Bars, 2.55¢ @ 2.60¢ for Track Bolts with Hexagon Nuts. There is scarcely any demand for Spikes in carload lots. Small lots are selling at 2¢ @ 2.10¢ and manufacturers are uncertain as to prices on carload lots under the circumstances.

Other Manufactured Iron and Steel.—A new building which will shortly be let is the Academy of Science in Lincoln Park, which will require a considerable quantity of Beams. Other building projects previously mentioned are hanging and have not yet been placed. The structural trade consequently depends almost entirely on the demand for small lots, which, fortunately, keep up well. Bridge works are taking moderate quantities of Angles. Plate orders are somewhat better in number, though not in size. Consumers are inquiring a little more, but mill orders are rare. Very little is doing in Black Sheets. There is some inquiry for carload lots of Galvanized Iron, but store trade has fallen off a little from the previous week. Prices of mill shipments, Chicago delivery, may be quoted as follows: Beams, 1.75¢ @ 1.90¢; Tees, 1.95¢ @ 2.05¢; Angles and Universal Plates, 1.75¢ @ 1.80¢; Tank Steel, 1.75¢ @ 1.85¢; Shell Steel, 2.05¢

@ 2.15¢; Flange Steel, 2.20¢ @ 2.30¢; High Grade Fire Box, 2.75¢ @ 5¢; No. 27 Common Black Sheets, 2.80¢ @ 2.83¢; Juniata Galvanized Iron, 70 and 10 and 5 % discount; Sheet Copper, 30 and 35 % off, according to quantity.

Old Rails and Car Wheels.—A lot of several hundred tons of Old Iron Rails was sold at equal to \$14.50, Chicago. Old Steel Rails are very quiet, with nominal quotations \$9 @ \$12, according to length. Old Car Wheels are extremely dull, with quotations of \$13 @ \$14, according to quantity.

Scrap.—A sale of 100 tons of No. 1 Forge is reported at \$10.25, delivered at buyer's works. This shows the very low price to which first-class material has fallen. Other Old Material is quiet. The dealers report Scrap not accumulating much at present, as so many railroad and other machine shops are shut down and consequently are not making Scrap. Nominal selling prices per net ton are as follows: No. 1 Forge, \$10.50; No. 1 Mill, \$8; Sheet Iron, \$5; Pipes and Flues, \$7.75; Axles, \$16; Horseshoes, \$12; Fish Plates, \$14.50; Spikes and Bolts, \$12.50; Cast Borings, \$5.25; Wrought Turnings, \$7.25; Axle Turnings, \$9; Heavy Cast, \$8; Stove Plate, \$8; Malleable Cast, \$8; Mixed Steel, \$9, gross ton; Leaf Steel, \$16.

Metals.—Carload lots of Lake Copper are now quoted at 10¢. First-class brands of casting Copper are maintained at 9.75¢, but scarcely any business is doing on this basis. Spelter is lower, and carload lots are nominally quoted at 3.60¢.

Wallace, Banfield & Co., Limited, of Irondale, Ohio, announce that they have appointed Casey & Day, 445 The Rookery, as sole agents for their Irondale Tin and Terne Plates.

St. Louis.

(By Telegraph.)

Office of The Iron Age,
Bank of Commerce Building,
St. Louis, August 30, 1893.

There continue to be reported from day to day resurrections of manufacturing establishments which have been closed down wholly or in part. This week the St. Louis Stamping Company have started up both their factory and rolling mill and the Eite & Henger Mfg. Company, who have been working every other week, have now decided to run every week.

Pig Iron.—There is no buying of any moment to report and yet there is a feeling of improvement noticeable that continues to gain strength daily. Production has been reduced almost 50 %, and while consumption has about kept pace with it, the indications are that an early revival is among the probabilities. Sales during the past week were made on the basis of the prices quoted herewith, which are for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry	\$12.25 @ \$13.50
Southern Coke, No. 2 Foundry	11.75 @ 12.00
Southern Coke, No. 3 Foundry	11.25 @ 11.50
Southern Gray Forge	10.75 @ 11.00
Southern Car Wheel	18.00 @ 19.00
Lake Superior Car Wheel ..	16.75 @ 17.25
Missouri Softeners	15.75 @ 16.50
Missouri Charcoal, No. 1 Foundry	12.75 @ 13.25

Bar Iron.—The market for Iron is perhaps a trifle firmer, owing to the

stoppage of a large number of mills in this locality. The demand is fairly active and prices are holding their own. Reports from different sections of the country indicate that stocks are short, but buyers are only taking what their absolute needs require. Mills quote 1.47½¢ @ 1.50¢, half extras, f.o.b. cars East St. Louis. Jobbers quote 1.65¢ @ 1.70¢ for lots from store.

Barbed Wire.—There is no change to report, trade is dull and prices same as last quoted—viz., Painted, \$1.95 @ \$2 in carload lots to jobbers, with 40¢ per hundred weight additional for Galvanized. Jobbers quote \$2.10 for small lots of Painted.

Wire Nails.—A general improvement is reported by mills and jobbers. The demand is steadily increasing and prices have been advanced 5¢ per keg, now being quoted at \$1.55 in carload lots to jobbers. Jobbers ask \$1.65 for small lots to the country trade.

Rails and Track Supplies.—Steel Rails remain as last quoted, dull at \$30.50 @ \$31. Track Supplies are ordered in a small way and prices are subject to shading, according to the size of the order. We quote as follows: Splice Bars, 1.65¢ @ 1.70¢; Spikes, 1.90¢ @ 1.95¢; Bolts, Square Nuts, 2.50¢; with Hexagon Nuts, 2.60¢. Old Iron Rails are weak at \$15 @ \$15.50.

Pig Lead.—This metal has been unusually active during the past week, and sales aggregating several hundred tons are reported. The market to-day closes with 3.40¢ bid, while sellers are holding at 3.45¢. The market is strong and higher prices are probable.

Spelter.—No change to report in this metal. There is no demand and prices are nominally 3.50¢.

Cincinnati.

(By Telegraph.)

Office of The Iron Age, Fifth and Main Sts.,
CINCINNATI, August 30, 1893.

There is so little doing in Pig Iron that it is difficult to give any accurate report of the market. In this district there is little more than a carload demand, which is freely supplied at previous quotations, but there have been large orders from the East, which have kept the market from stagnation. An inquiry for a considerable quantity of No. 2 and No. 3 Foundry and for Gray Forge, while it did not lead to any business, developed the fact that these Irons could be bought for spot cash much under the quotations, showing that there are some needy furnaces that would sell Pig Iron for less than the cost to manufacturers. It is understood that instead of buying the Pig Iron even at the low prices at which it could be obtained, Soft Steel was taken as being the cheaper. If so the Steel must be obtained at very low price. While quotations cover most of the business done, they do not represent the lowest prices for which Pig Iron might be bought for prompt delivery and spot cash, when the price would depend upon the urgent necessity of the sellers and might not be repeated. It is believed that the market is rapidly working into a condition that will bring around a more satisfactory state of trade. We quote as follows:

Foundry.

Southern Coke, No. 1	\$12.75 @ \$13.00
Southern Coke, No. 2	10.75 @ 11.00
Southern Coke No. 3	10.25 @ 10.50
Ohio Soft Stone Coal, No. 1	15.50 @ 16.00
Ohio Soft Stone Coal, No. 2	14.50 @ 14.75
Lake Superior Coke No. 1	15.00 @ 15.25
Lake Superior Coke No. 2	14.00 @ 14.25

Hanging Rock Charcoal, No. 1..	18.50 @	19.00
Hanging Rock Charcoal, No. 2..	17.50 @	18.00
Tennessee Charcoal, No. 1.....	14.00 @	14.25
Tennessee Charcoal, No. 2.....	13.00 @	13.25

Forge.

Gray Forge.....	10.00 @	10.25
Mottled Coke.....	9.75 @	10.00

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	17.75 @	18.00
Lake Superior Car Wheel and Malleable.....	17.00 @	17.25

New York.

Office of *The Iron Age*, 96-102 Reade street, }
New York, August 30, 1893.

Pig Iron.—The market is still exceedingly dull. Locally some of the largest consumers still decline to take shipments and are melting very little iron. Tempting offers are still being made for cash. Thus negotiations were pending during the past week for a block of several thousand tons of Southern Gray Forge at \$7 at furnace, spot cash, but have fallen through. This is the lowest figure on record. We quote Northern brands \$14 @ \$15 for No. 1; \$13 @ \$14.25 for No. 2; \$12.25 @ \$12.50 for Gray Forge, at tidewater. Southern Iron, same delivery, \$13.25 @ \$14.25 for No. 1; \$12.25 @ \$13.25 for No. 2; \$11.50 @ \$12.25 for No. 3; \$11.75 @ \$12.25 for No. 2 Soft, and \$12.25 @ \$13 for No. 1 Soft. Gray Forge is \$11.25 @ \$12.

Spiegeleisen and Ferromanganese.—There has been no business. Ferromanganese is nominally \$55 @ \$56 at tidewater.

Billets and Rods.—The market is very dull. We quote nominally: Domestic Billets, \$22.75 @ \$24, and foreign Billets, \$28 @ \$28.50, tidewater; domestic Wire Rods, \$30 @ \$31, and foreign Rods, \$39.50 @ \$40.

Steel Rails.—The Eastern mills are only getting occasional 500 and 1000 ton orders for quick delivery, and in this way are running occasional days. The outlook is not regarded as encouraging for the balance of the year, and the period is approaching when the mills will be looking for winter work. Some of the authorities in the Rail trade do not expect any active business until next spring.

Track Material.—We quote: Spikes, 1.70¢ @ 1.90¢; Fish Plates, 1.45¢ @ 1.60¢; Track Bolts, Square Nuts, 2.25¢ @ 2.40¢, and Hexagon Nuts, 2.40¢ @ 2.50¢, delivered.

Manufactured Iron and Steel.—One good contract for Architectural work was placed during the week, and the bids are now in for the Third Avenue Bridge. Until they are tabulated no data concerning the prices at which the Iron work has been offered are available. In Plates and Bars only a moderate business is going. An evening newspaper has voiced the complaints of some builders that deliveries are not being promptly made by the mills. The fact is forgotten that when business is slack deliveries are as troublesome as in very active periods. The mills cannot be expected to put in rolls for every small odd section, nor is it wise for any mill management to roll heavily to stock in times like these. Builders are apt to hold off in their orders in a very unreasonable manner. We quote: Beams up to 15-inch, 1.75¢ @ 2¢; 20-inch, 2.10¢ @ 2.25¢, for round lots; Angles, 1.75¢ @ 1.90¢; Universal Mill Plates, 1.70¢ @ 1.90¢; Tees, 2¢ @ 2.15¢; Channels, 1.80¢ @ 2¢, on dock. Steel Plates are 1.65¢ @ 1.90¢ for Tank; 1.90¢ @ 2.10¢ for Shell; 2¢ @ 2.15¢ for

Flange, and 2.50¢ @ 2.80¢ for Fire Box, on dock; Refined Bars are 1.60¢ @ 1.9¢, on dock, and Common, 1.45¢ @ 1.60¢; Soft Steel Bars are 1.50¢ @ 1.70¢; Scrap Axles are quotable at 1.75¢ @ 2.10¢, delivered; Steel Axles, 1.70¢ @ 2¢, and Links and Pins, 1.70¢ @ 1.80¢; Steel Hoops, 1.75¢ @ 1.90¢, delivered; Cotton Ties, 75¢ @ 85¢ per bundle, at mill.

Old Material.—We quote nominally Old Iron Rails at about \$15 @ \$15.50; Old Steel Rails, \$12.50 @ \$13; No. 1 Wrought Scrap Iron at \$14 @ \$14.50, and Car Wheels at \$11.50 @ \$12.

Metal Market.

Copper.—It is estimated that exporters have purchased upward of 5,000,000 lb of Ingot during the past fortnight, and facts are brought out that would warrant the statement that the estimate is a modest one. The movement included Lake Superior Ingot, Electrolytic and even casting stock. No particulars as to the proportion of the respective varieties taken by shippers were divulged, but the movement seems to have been sufficient to arrest the previous downward tendency of prices. French buyers, it is understood, have recently secured 1000 tons of Calumet and Hecla brand at a cost of not over 9½¢, but whether this deal is included in the aggregate sales above noted is not clear. The buying for home account has not improved to any great extent, nor does the demand show much spirit. Still, some offers were made indicating that none but small lots of Lake Superior Ingot, if, indeed, any, can now be secured at 9½¢ for prompt or near future delivery. In this connection it may be noted that 9½¢, regular terms, was bid for over 250,000 lb in the face of offers of contracts on the Metal Exchange at 9.50¢ @ 9.60¢. Some Electrolytic Copper has been sold at as low as 9¢, but the bottom quotation at present is 9¼¢ @ 9½¢, according to brand and quantity. Casting Copper is quite as irregular, with the range of 9¢ @ 9½¢ quoted.

Pig Tin.—There has been an advance of about ¼¢ per lb in Straits Tin for prompt delivery. A week ago there were sales at 18.75¢, while business was effected on Wednesday at 19.25¢. Sales and resales of contracts during the interval involve about 650 tons, and it was intimated in some quarters that half as much more stock was turned privately, chiefly for September delivery. Operations in the later deliveries have been very moderate, but prices for these as well as for early deliveries have improved decidedly, October reaching 19.70¢ bid and November 19.85¢ bid, against 19.25¢ and 19.50¢ respectively on the 23d inst. Closing of old contracts has figured with some prominence and nicely timed manipulation has been effective in helping prices upward, but gradual reduction of surplus supplies is beginning to count as a factor, and some turn of sentiment has been brought about by strong circumstantial evidence that the greater portion of available supply is in the hands of dealers who have financial matters so adjusted that carrying Tin at present is a pleasure rather than a burden, since spot supplies are being reduced in no uncertain way, or, say, at the rate of close on to 1500 tons a month. On Wednesday 19.30¢ was paid for September 1 delivery and 19.50¢ was bid for seller's option first half of September. October

went to 19.75¢ bid without drawing out stock to any considerable extent.

Pig Lead.—Two weeks ago the price of common domestic Pig Lead was down to 3.30¢. A week later the price was up to 3.45¢. Since then there has been an advance to 3.70¢ @ 3.75¢, and there appears to be less Lead on sale at 3.75¢ at the present time than there was at 3.30¢ a fortnight ago. To all accounts not over 500 tons have been sold in this market during the past week, and the appearances are that the effect of the diversion of Mexican Silver Lead Ores to Europe and liberal shipments thence of Pig Lead smelted from Mexican Ores, along with light American production, leave home consumers at some disadvantage, for the time being at least. Certain it is that the stock on the spot is unusually light, and that Western smelters still hesitate about selling lots of over 50 tons at present prices. A little anxiety has been manifested by a few buyers who were bearishly inclined two or three weeks ago, but who have since opened their eyes to the true situation, and even became alarmed at the Silver legislation in the House of Representatives. Otherwise the turn in the market seems to have been taken philosophically, and speculative interest is remarkably tame at the present time.

Spelter.—Ordinary brands of Western Spelter have been sold at 3.55¢ @ 3.60¢ for prompt and near future shipments. Choice brands brought 3.95¢ @ 4¢, delivered to New England points. Dealings in the several grades have been on a very moderate scale, and the demand at present is slow owing to the stagnant condition of Galvanizing and Brass manufacturing industries.

Antimony.—Except of small lots, very few sales are making. The demand is moderate as well and prices barely hold their own. We quote at 9¼¢ @ 9½¢ for Hallett's, 10¢ @ 10½¢ for L. X., and 10½¢ @ 10¾¢ for Cookson's, in round lots.

Tin Plates.—The market is without change for the better. Neither spot good nor future deliveries are taken except in a perfunctory manner, and the demand is as spiritless as it has been at any time during the past 30 days. Spot quotations are about as follows: Coke Tins—Penlan grade, IC, 14 x 20, \$5.20; J. B. grade, do., \$5.27½; Bessemer full weight, \$5.30; light weights, \$4.85 for 100 lb, \$4.80 @ \$4.82½ for 95 lb, \$4.75 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.60; Siemens Steel, IC basis, \$5.65; IX basis, \$6.75. Charcoals—Melyn grade, IC, \$6.35 @ \$6.87½; Crosses, \$8; Allaway grade, IC, \$5.60; Crosses, \$6.75; Grange grade, IC, \$5.70; Crosses, \$6.85. Charcoal Terns—Worcester, 14 x 20, \$5.70; do., 20 x 28, \$11.35; M. F., 14 x 20, \$7.35; do., 20 x 28, \$15; Dean grade, 14 x 20, \$5.30 @ \$5.37½; do., 20 x 28, \$10.50 @ \$10.60; D. R. D. grade, 14 x 20, \$5.10 @ \$5.15; do., 20 x 28, \$10.10; Alyn, 14 x 20, \$5.32½ @ \$5.35; do., 20 x 28, \$10.40; Wasters—S. T. P. grade, 14 x 20, \$4.87½; do., 20 x 28, \$9; Abercarne grade, 14 x 20, \$4.87½; do., 20 x 28, \$8.90.

At a meeting of the creditors of Ripley & Bronson, held in the Lindell Hotel, St. Louis, Mo., on the 18th inst., a proposition was received by which the firm proposed to settle with their creditors on the basis of 50 cents on the dollar. It is probable this proposition will be accepted.

Pittsburgh.

(By Mail.)

Office of *The Iron Age*, Hamilton Building, Pittsburgh, August 29, 1893.

In some respects the situation shows improvement and there is a more hopeful view, the impression prevailing that the critical period has passed. Among the mills there is some activity, and certain plants that have done nothing for about two months are preparing to resume in part within a week or two. Of course none of the concerns now in operation have enough orders on hand to keep them employed for any great length of time, but they expect to get enough business right along to keep at least part of their capacity employed. The better outlook is naturally confined nearly altogether to finished material, but if improvement continues it will soon be felt in raw materials as well. For example, Pig Iron and Billets are very dull, while in Wire Nails, Wire, Sheets, and also in Pipes and Tubes, there has been a material gain in volume of business. Prices, too, are feeling the effects of the idleness of so many plants, and on some lines actual advances have occurred. At one prominent bank here it was learned that money was slightly easier and that discounts could be procured with less trouble than was experienced one month ago.

Pig Iron.—Outside of an occasional sale involving 100 or perhaps 200 tons there is nothing doing in Pig Iron. The fact that the Steel plants, which are the largest consumers of Bessemer Pig, are nearly all closed down will account in a great measure for the light demand. In addition the Edgar Thomson mill has closed for an indefinite period, and with five furnaces at Bessemer running on Bessemer Pig and one on Ferro, this large output, with the exception of what goes to Homestead, is being stocked, and there is still considerably more Pig Iron being made here than is being consumed. Stocks at the furnaces that are running are increasing pretty fast and further restriction in production, particularly at the Edgar Thomson furnaces, will likely occur. The demand for Foundry and Mill Irons is also very light, there being practically nothing doing. Prices show no decided change and we quote as follows:

Neutral Gray Forge.....	\$11.75 @	cash.
All-Ore Mill.....	12.00 @	"
Bessemer Pig.....	12.50 @	"
No. 1 Foundry.....	13.00 @	\$13.25	"
No. 2 Foundry.....	12.00 @	12.25	"
Charcoal Foundry No. 1.....	15.00 @	16.00	"
Charcoal Foundry No. 2.....	14.00 @	15.00	"

Billets.—A number of sales of Billets for Eastern shipment have been made by Pittsburgh recently at prices ranging from \$20.25 to \$20.50 at makers' mill. But one concern in the Pittsburgh district is running this week, and this to half capacity or less. It is probable that two of the mills in the Wheeling district will start shortly after September 1, as it is understood their wage scales have been arranged. We quote at \$20.50 at makers' mill, but for Rod Billets this price would be shaded 25¢ or perhaps more.

Muck Bars.—There are prospects of a better demand before long on account of increased activity among the mills, but just now there is very little doing. We quote at \$21 @ \$21.50, f.o.b. at buyers' mill.

Ferromanganese.—We make nominal quotation of \$57 for domestic, delivered.

Steel Rails.—The Edgar Thomson plant closed on Saturday, August 26,

for an indefinite period. During the last four or five days it was in operation it was run on such sizes as are liable to be called for during the shut down.

Finished Iron and Steel.—There is nothing new to report. Mills are not working more than half time and some even less. Plates show no change in prices, while in Structural Material some extremely low prices made a month or more ago have been withdrawn. Sheets are in better demand, this being the season for the placing of stove-pipe orders. Prices are a little better, with probabilities of still higher values. Among the mills making Iron and Steel Bars there is a little more activity, but prices continue to rule very low. It is likely that several of the Valley mills will start in part about September 1. We quote Beams and Channels, up to 15 inches, at 1.60¢ @ 1.70¢, f.o.b. cars Pittsburgh; Angles and Universal Plates, 1.60¢ @ 1.70¢; Tees, 1.65¢ @ 1.75¢; Z-Bars, 1.70¢ @ 1.80¢; Tank, 1.60¢ @ 1.65¢; Shell, 1.70¢ @ 1.80¢; Flange, 1.80¢ @ 1.90¢; Ordinary Fire Box, 2.25¢ @ 2.50¢; Special, 3¢ @ 4¢; Machinery Straightened Tire, 1.90¢ @ 2¢; Spring, 1.90¢ @ 2¢; Toe Calk, 2¢; Tool Steel, 5½¢ and upward; Special brands, 12¢ and upward; Steel Bars, 1.40¢ @ 1.45¢, with Bar Iron extras. Bars in the Valley are held at 1.40¢, half extras, at mill. No. 24 Soft Steel Sheets, 2.55¢; No. 26, 2.65¢, and No. 27, 2.75¢; Galvanized Sheets are firmer and we have advanced quotation slightly and now quote at 70 and 7½¢ @ 70 and 10¢, according to order.

Rods.—There being no demand and the mills being closed, we make nominal quotation of \$28 at mill.

Wire and Cut Nails.—The improvement in demand continues, and stocks in the hands of makers and jobbers are very light. Prices are also considerably firmer and buyers are willing to pay the advance provided they can get orders filled promptly, which is the chief difficulty just now. In this vicinity the Beaver Falls Mills is the only plant in operation. Cut Nails are also in slightly better demand and we quote at \$1.10 base in carload lots at mill.

Barb Wire.—This market is about bare of Barb Wire, stocks of local makers having been pretty thoroughly cleaned up. As a result shipments are being made from points further West. Prices are firm on the basis of \$2.40 for Four-Point Galvanized in carload lots, and 40¢ less for Painted. Plain Wire is active at \$1.65 in carload lots for Nos. 6 to 9, \$1.75 for Nos. 10 and 11, with the usual advances for less quantities.

Pipes and Tubes.—There has been a perceptible improvement in demand, and prices are also firmer. The American Tube & Iron Company have secured a contract from the Citizens' Natural Gas Company of Lafayette, Ind., for 4 miles of 8-inch Pipe, while 2 miles of 4-inch for the same concern was taken by the McElwaine-Richards Company of Indianapolis, Ind.

Connellsville Coke.—For the week ending August 19, in the Connellsville region, there were 3377 ovens in blast and 13,965 idle, with a total estimated production of 27,900 tons. Compared with the production of the previous week this was a decrease of 9685 tons. Since the week of July 22 the output has decreased at the rate of about 15,000 tons per week. We quote Furnace Coke at \$1.20 @ \$1.25 in tons of 2000 lb, f.o.b. cars in Connellsville

region. Foundry Coke is in fair demand and is held at \$1.50 to dealers and \$1.65 to consumers.

Financial.

With the announcement of the large majority by which the motion for absolute repeal of the Silver Purchase law was passed by the House of Representatives on Monday and the moral certainty of a similar result in the Senate, the financial situation has in many respects shown signs of a decided improvement during the week under review. One of the most encouraging features developed during the past few days is a decline in the premium on currency to the merely nominal rate of ½ @ ¾%, with a very moderate demand at that. For this circumstance the continued large imports of gold and a gain on the part of the banks, both in deposits and loanable funds, is probably mainly responsible. The general supply of cash is evidently far better than it was a week ago, and it is probable that the premium will shortly cease entirely. Appeals for aid from out-of-town banks are said to have practically ceased, and coin and notes are beginning to flow back from the interior to swell the resources of the New York banks.

The statement of the Associated Banks, issued on Saturday, was of an encouraging nature. It showed an increase in the reserve of \$5,308,125, which means that the banks have in two weeks cut down their reserve deficiency from \$16,545,375 to \$6,737,675. The next thing should be a wiping out of the deficiency, and—probably by slow degrees—a reduction in the amount of Clearing House loan certificates. The other items of a favorable character given in the statement are an increase in specie of \$4,578,100; in legal tenders of \$774,400; in deposits of \$177,500; and in circulation of \$1,042,000. There was a decrease in loans of \$2,932,500. The New York banks now have a circulation of \$3,780,200, an increase of \$3,313,800 over that of a year ago, or more than 60%. Consequently the lack of money has clearly little to do with the present financial stringency. The case was very clearly put by Secretary Carlisle on Tuesday. He said, in substance, as follows: "No greater mistake could be committed than to assume that the present financial embarrassment is caused by actual scarcity of money in the country. The fact is that the amount of currency of all kinds in the country, outside of the United States Treasury, on the 25th day of the present month, was \$58,452,350 greater than the amount outstanding on the 1st day of the month, and \$70,294,783 more than the amount outstanding on the 1st day of September, 1892, when business was active and prosperous."

Now that the destiny of the Silver Purchase law is definitely known there is every reason to hope that returning confidence will be practically reflected in a general amelioration of the strain in the financial and commercial situation.

Hopeful signs of a reaction from depression are already noted. In addition to an easier feeling in the money market, better currency supply and decided advance in values of securities, there are other encouraging tokens, in the resumption of operations by banks and industrial establishments after temporary suspension. Many of the former have reopened their doors during the week, and others propose doing so

on September 1. Comptroller Eckels, on August 28, published a statement showing that of the 145 national banks that have suspended since January 1, 34 have already resumed business, and 62 show excellent prospects for early resumption. Of the rest, one has gone into voluntary liquidation, while 57 have been placed in the hands of receivers. The number of industrial establishments reported as resuming work during the past week compares to advantage with the number closing down; but, on the other hand, notices of reductions of wages affecting thousands of workers continue to be reported from all parts of the country, showing that the pinch is yet felt keenly. It will, in the nature of things, take some time before any general return to the former level of confidence and credit can be reached, even if the uncertainty as to a possible upset in the value of some domestic products by tariff revision does not succeed in holding back a great part of the confidence which the late satisfactory action of Congress has invited.

A few more New York Clearing House loan certificates were issued during the present week. The amount now outstanding is \$38,280,000; and that of Boston \$11,040,000. Although it is said that some \$18,000,000 of this amount is still unused, it is not likely that any material reduction will be made by withdrawal of certificates for some time—that is, until the banks begin to gain more largely in deposits and have reduced their loans materially. The large demand which is likely to occur shortly for money to move the crops is another factor that would militate against any present large reduction of cash resources by the banks.

The receipts of gold from abroad by last week's steamers were heavy, but the small premium now obtainable has given a check to further ordering for the present. Altogether some \$39,000,000 have thus far been received during the past six weeks, making an aggregate importation of \$46,000,000 for the present year, against \$68,000,000 exported in the same period. Railroad earnings, for the most part, still show a decrease over last year.

In the loan market money on call has been easier, fluctuating between 6 and 2%, and ruling generally at about 3%, at which figure it closed on Wednesday. Lenders discriminate, however, in regard to the stock collateral accepted. Time money, although in good demand, has not gained much in activity. It is still firmly held, although there is more in the market than has been the case for some weeks, and some very high rates are reported to have been paid for short-time accommodations on gilt-edged securities. The rate is nominally 6%, but to this must be added a very liberal commission. The market for commercial paper does not move, although large amounts are offered, and brokers who have paper to sell say that from inquiries received from interior financial institutions a better market may develop before long. Meanwhile it is quoted nominally as follows:

Double named: Sixty days. Four months.
First-class 10 @ 15 10 @ 15
Good 15 @ 18 15 @ 18
Single named:
First-class 15 @ 20 15 @ 20

Foreign exchange, which ruled firmer on the advance in the Bank of England rate of discount to 5% on Thursday of last week, eased off on account of the dull market for gold to arrive, and closed weak on Wednesday, when actual business was done in sterling as

follows: 60 days, 4.82 @ 4.82½; demand, 4.86 @ 4.86½; cables, 4.87; commercial, 4.81.

Domestic exchange on New York is quoted as follows: Boston—40¢ premium for cash; checks, 15¢ discount to par. Charleston—Buying, ½ @ ½ discount; selling, par. Savannah—Buying, ½ off; selling at par from 100 to 300, ½ discount from 500 to 1000, and ½ for 1000 and over. New Orleans—Bank, \$2 premium; commercial, par. San Francisco—Sight, 10; telegraphic, 20. St. Louis—75¢ discount. Chicago, \$5 discount.

The exports of general merchandise from this port for the week ending Tuesday were valued at \$8,336,507, against \$7,896,014 last week and \$6,481,905 for the corresponding week of last year.

In the stock market, transactions have not been exceptionally heavy, although the favorable news from Washington had a decidedly healthy effect in pushing up the values of securities—almost the entire list showing a material advance. The news on Monday evening of the unexpectedly large majority in the House in favor of repeal was received in Wall street with apparently unmixed satisfaction. There was, however, no pronounced bull movement in stocks, as the action of the House had been largely discounted in former operations. The tendency has since been for a steadier feeling in the market. Some large purchases of American securities have been made by London and other European financial centers during the present week. The greater "industrial," notably Sugar, have felt the good effect of the betterment of the market for securities. The following list shows the extreme fluctuations of actual stocks since Thursday, August 24, and the closing prices on August 30:

	High.	Low.	1.30 p.m.	est.	Aug. 30
American Sugar Ref.	82½	72½	85		
Atchison, Topeka & S. Fe 17	14½	18			
Balt. & Ohio.	68	65			
Chicago Gas.	52½	48½	54½		
Chic. & N. W.	98	93½	98½		
C. B. & Q.	79½	74½	80½		
Chicago, Milwaukee & St. Paul.	56½	51½	57½		
Chic., Rock Isd. & Pacific.	60½	56½	61½		
Del., Lack. & W.	137	133½	137½		
Genl. Electric.	41½	37½	39½		
Lake Shore.	119	113½			
Louisville and Nashville. 54½	52	54½			
Manhattan.	114½	110½	118½		
Missouri Pacific.	23	20½	23½		
Minnesota Iron, asked.			60		
Nat. Lead, common.	28½	24½	29½		
N. Y. Central.	100½	97½			
N. Y., L. E. & Western. 15	11½	14½			
Northern Pacific, pref.	23½	18½	23½		
Northern Pacific, common.	6½	3½	6½		
Richmond & West Pt. Term.	2	1	2		
St. Paul & Omaha.	30	28	31½		
Union Pacific.	21½	17½	22½		
Western Union.	80½	76	80½		

Government bonds are steady and not active. The closing prices were as follows:

	Bid.	Asked.
4s, 1907, registered.	111	112
4s, 1907, coupon.	111	112½
2s, registered.	97	...

No sales have been made at the board for some days. The railway and miscellaneous bond market has been much more active than for a long time past, and sharp advances have been scored during the week. First-class railway bonds have been in active demand, with considerable foreign buying during the present week. Bar silver in London is quoted at 34 pence per ounce, and in New York at 75¢ per ounce. The Treasury Department on Tuesday pur-

chased 345,000 ounces at 73.75¢ per ounce.

The exports of silver to Europe are unusually heavy this year. To date there have been shipped from New York \$20,133,898, as compared with \$13,519,047 in 1892, \$10,660,766 in 1891 and \$12,456,466 in 1890.

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, August 30, 1898.

Pig Tin market has been quiet and somewhat irregular, yet showing no radical change for the week. At one time the price for spot Straits reached £77. 2/6 @ £77. 5/½, then steadily declined and afterwards recovered slightly, closing at £77. 15/ for prompts and £78. 5/ for three months' futures. There has been a fair general trade demand, but not enough to have any decided effect upon the market. Some curiosity has been excited by advices to the effect that purchases have been made in behalf of continental operators, chiefly at the Straits direct, at prices below London values.

Copper is stronger, with prices for Merchant Bars about 5/ higher on the operations of the week after a decline to £40. 12/6. Lowness of price and improved financial outlook in the States attracted some buyers, but dearth of money hinders speculation. Since the decline above noted, due chiefly to pressure to sell by weak holders, purchases for American account have been larger and give the market tone. To-day's quotations on Merchant Bars are £41. 12/6 for prompts, and £42. 2/6 for three months' futures. Best Selected English, £46. 5/.

Tin Plate market is still somewhat irregular, but anticipated early termination of the coal strike in Wales is bringing more inquiry. With holders willing to unload, a very good business has been done. Several lots of full weight high grade Cokes were sold at 11/6, f.o.b. Liverpool. Buyers have, however, since reduced their limits. American business generally is limited. For Russian account scarcely anything is moving. Over 20 works are now idle, owing to scarcity of Bars and lack of fuel. Stocks at shipping ports, 241,000 boxes, against 236,000 boxes a week ago. Liverpool prices are as follows:

IC Charcoal, Alloway grade.	12/9 @ 13/3
IC Bessemer Steel, Coke finish.	11/6 @ 11/9
IC Siemens.	11/9 @ 12/
IC Coke, B. V. grade, 14 x 20.	11/6 @ 11/6
Charcoal Terne, Dean grade.	11/6 @ 11/6

Spelter is weaker, with price of ordinary Silecian down to £16. 17/6 and the demand very slow. At the close the market was steadier at £17 @ £17. 2/6. Soft Spanish Pig Lead has declined to £9. 15/½, and the market is slow at the decline.

In the Iron and Steel trades business has been on a very moderate scale. Speculation in warrants has continued light also. Last sales of warrants were at 42/5 @ 42/6 for Scotch, 35/1½ for Cleveland, and 45/6 for Hematite.

Washington News.

(From our Special Correspondent.)

WASHINGTON, D. C., August 29, 1893.

Chairman Wilson of the Committee on Ways and Means and Speaker Crisp are not of one mind on the utilization of the time of the House between now and the possible disposition of the silver repeal proposition in the Senate before the time for the meeting of the regular session of Congress. The Speaker believes in going ahead with the regular business of the House, and the chairman of Ways and Means would prefer recesses of the House for three days at a time, pending the silver discussion in the Senate, and, if concurrent legislation is reached, to take a long recess into November. The views of the Speaker, if adhered to by him, will prevail.

In giving his reasons for his proposition Chairman Wilson said: "It is the purpose to begin at once on the preparation of a tariff reform measure on the line which we assume was demanded by the results of the last national contest. Such a radical departure from the existing tariff schedules will take much time and the closest application. If the House remains here on business the Committee on Ways and Means will be annoyed and interrupted by delegations and individuals desiring to be heard in behalf of their varied interests, and the representatives of their districts will be importuning the committee to give them opportunity to make statements. We have all the information," continued Chairman Wilson, "which we require. We will utilize what we have and not take time to accumulate more. Therefore, it might as well be known now as later that the Committee on Ways and Means will not give any hearings to any one on this subject."

In reply to a question in reference to the probable time for the completion of their bill in committee, Mr. Wilson replied: "I should say that the tariff reform bill will be ready to report by February, and we hope to make quick work of it in the House."

"We expect to introduce, for reference the bill upon which the committee will make its work within a week or ten days."

The conversation of the chairman shows that the measure will be constructed for revenue only and will, therefore, deal largely with all raw materials on the free list and a low rate of duty from which the Government can realize a handsome revenue. The committee was constructed for this sort of work, and there is no danger of any disagreement as to details. Any bill which the committee reports will be certain to pass the House. In the Senate it may be slightly modified, but it will still be on the revenue basis.

It is evident from the chairman's talk that he means business. The majority of the committee are also equally interested in getting the matter before them for consideration. The chairman is now preparing a bill for introduction and reference.

The industrial world will be able from this to form some idea as to what kind of reform it is proposed to give when the bill is reported.

A circular letter from Charles Lyman, president of the United States Civil Service Commission, Washington, D. C., states that there is a demand for more

fourth assistant examiners in the Patent Office than the Civil Service Commission is able to supply, as the examination can only be passed by those who have an advanced education in the sciences. The subjects of the examination are: Physics, technics, mathematics and chemistry, and mechanical drawings. A pamphlet containing sample questions, and also containing the dates and places at which examinations may be taken, will be furnished to those who desire to become applicants. The salary of the position is \$1200 per annum.

Colorado Fuel & Iron Company.

The stockholders of the Colorado Fuel & Iron Company held their first annual meeting on August 16, at Denver, Col. The reports submitted show the company to be in a prosperous condition.

For the eight months elapsing since the consolidation of the company the books show a credit net earning of \$733,033.54, and a debit of \$370,434.17, leaving a gross surplus of \$362,599.35. From this surplus there is deducted: Sinking funds for coal and iron mines, fuel department, equipment, \$52,082.52; iron department equipment, \$4480.50; real estate, \$33,368.91; dividend of 1½ per cent. on common stock, paid May 15, 1893, \$115,348.75.

These deductions leave a net surplus of \$157,318.69. The totals of earnings and expenses for these past eight months are:

Fuel department	\$577,296.23
Iron department	174,206.15
Denver retail department	10,836.08
Securities, stocks and bonds	35,117.43
Miscellaneous	2,805.67
Total	\$800,261.56
General expenses	67,228.02

Net earnings

\$733,033.54
The stockholders present at the meeting expressed themselves as highly satisfied with the manner their interests in the concern had been watched and cared for.

Pig-Iron Currency.—Of all the astounding contributions to the recent financial history of the country, the following from the *Birmingham News* is the greatest: "In view of the fact that gold and silver have almost dropped from the avenues of trade, and currency is very scarce, the plan recently adopted by a North Alabama furnace company is rather striking. They commence their operation upon a basis of pig iron circulation. They pay for all materials which go to make their iron product in pig iron, while they only pay employees and railroads in currency. If this new circulation should become popular in this district, we can surely look for an early restoration of material prosperity in this section. This is significant in that it shows that there is such confidence in pig iron, the product of this district, if there is not in anything else."

YOUNGSTOWN, August 30.—The finishers have agreed to make a reduction, which does not change the situation. The mills will start up when their proprietors are ready. They hold the key to the situation.

The Castle Rock Mining Company of Roanoke, Va., have completed a branch road to their iron mines near Roanoke, and shipments of ore will commence very shortly.

PERSONAL.

W. H. Preece, chief engineer and electrician of the British Postal Telegraph Service, is now in this country. He is one of the English official delegates to the Electrical Congress at Chicago.

O. W. Ludlow has resigned his position as superintendent of the Springfield, Ill., Boiler Works and removed to New York.

Walter Scranton has been appointed president of the Lackawanna Iron & Steel Company and associated mines and works, with headquarters at New York. He has charge of the finances, of the sales and the purchases.

Sir Henry Bessemer, who is now in his eightieth year, is reported to be engaged in writing his autobiography.

We print elsewhere a letter from the Steel & Iron Improvement Company from which it will be observed that they are about to build at Ashtabula a large plant in which the Adams-Blair process will be used. The plant will contain two 20-ton open-hearth furnaces with Adams' reducing furnace containing 32 chambers. The blooming mill will be of sufficient size to accommodate the output of the open-hearth plant, and will be of the Bernard-Lauth design. It is the intention of the concern to take the ingots and roll down to 4 x 4 billets, which will be sold in the open market. Arrangements will be made to establish a number of allied industries in the vicinity of the plant, whose product they will use as their raw material.

In all mills of the Union Iron & Steel Company, Youngstown, repairs and improvements are nearly completed. At the lower mill single puddling furnaces have been changed to double and vertical boilers attached. The plant of this company will be ready very soon for a long run, if conditions warrant.

Several hundred men are at work around the new plant of the Ohio Steel Company, and material for new steel structures has commenced to arrive from Pittsburgh contractors. A general reduction of 10 per cent. in wages, affecting all employees not working for contractors, has gone into effect.

The new billet mill being erected by Jones & Laughlins, Limited, of the American Iron & Steel Works, at Pittsburgh, to which reference has already been made in these columns, has been completed, and it was successfully tested last week. In this mill 4 x 4 billets will be rolled down to 1½ inches without reheating. A new continuous mill is also in course of erection at this plant, which will not be completed for some months. It will be equipped with modern machinery which will permit a large amount of material to be turned out and at considerable saving of labor.

The wire nail department of the Beaver Falls Mills, at Beaver Falls, Pa., has been put on double turn. The rod mill of this plant is still idle, and no date has yet been fixed for resumption of operations.

HARDWARE.

Condition of Trade.

IT IS PLEASANT to note indications of improvement in business which, although slight, are encouraging as to the future course of trade. Some increase in the demand from retailers and jobbers is reported, and travelers are sending in more frequent orders and for somewhat larger quantities. These orders are, however, for the most part small and for the most part cover only the immediate requirements of the purchasers. Reports from some Western points are also gratifying, as indicating a perceptible improvement. The assurance of the early repeal of the Sherman bill, and the accompanying improvement in the financial situation are noted with especial satisfaction, and it is hoped that there will be a gradual if not a prompt return of confidence and prosperity. The manufacturers of Hardware are for the most part in operation, but are running their works on short time. The conservative policy pursued has prevented the accumulation of the usual stocks of goods, and in many lines if an animated demand should set in there would soon be difficulty in executing orders. In other lines, however, stocks are ample. Collections are referred to as fair in view of existing conditions, and there is less complaint on this score than for some time past. The financial strength shown by the Hardware trade throughout the country is a matter of congratulation.

Chicago.

(By Telegraph.)

The Shelf Hardware trade in this city has improved considerably. Orders are now coming in for Sheet Iron, Stove Boards, Stove Pipe, Elbows and other cold-weather goods which must soon be supplied to the consumers in the Northwest. A considerable trade in corn crop specialties is also doing, such as Corn Knives, Baskets, Scoop Shovels, &c. The buying is not in large quantities, but the movement is, nevertheless, encouraging, as orders are getting more numerous. The demand for Builders' Hardware is only moderate and not to be compared with what it would have been under ordinary conditions. Reports from Milwaukee are even more

encouraging than from the Hardware trade in this city. The Milwaukee jobbers say that their collections are greatly improved of late and their orders are very much better, so that they are not inclined to complain of the business they are now doing. It is hoped that the failure of George C. Cribb, which occurred there on Monday, will not seriously interfere with the better feeling which has developed so rapidly of late. Mr. Cribb's failure is an important one, as his assets are placed at \$800,000 and his liabilities between \$600,000 and \$700,000. He was an extensive dealer in Agricultural Implements, wagons and carriages. Manufacturers of Hardware specialties have not yet begun to feel much benefit from the encouraging outlook in the trade. It is too early for this to occur. It is something new to be told by jobbers that they can ship goods on consignment, and that they will be sold if possible, but this has been the experience of more than one manufacturer of late when soliciting orders. Brass and Copper goods are moving very slowly, and there is not much doing in Tin Plate. Orders in these lines are confined closely to the pressing wants of consumers. A notable feature of the trade is the very heavy demand for Bale Ties for baling hay, evidently caused by the large exports. The trade in Heavy Hardware is not in quite as good condition as Shelf Hardware. This is owing to small demand from manufacturing consumers, whose factories have been quite generally shut down to await an improvement in the financial situation.

St. Louis.

(By Telegraph.)

Jobbers of Hardware report an improvement both in the volume of business and collections. Traveling men are sending in orders more frequently and in some sections the orders are increasing, particularly in Texas, Illinois and the West. The situation in the South is improving. Money is being sent to move the crops and merchants are able to do some business as the result. The demand runs largely to shelf goods, Scoops, Shovels, Builders' Hardware, &c. Wire Nails are selling in good quantities at higher prices. Collections are only fairly good.

Notes on Prices.

Wire Nails.—The slight improvement which has characterized the market for the past week or two still continues, with some increase in the demand. The mills which have been

closed so generally during July and August are beginning to resume operations. The shut down has prevented any accumulation of goods in their hands, and stocks are broken, the trade finding difficulty in obtaining complete assortments. The negotiations with reference to an agreement for the control of production and prices have not yet been consummated, but it is understood that they are progressing favorably. The manufacturers in the meantime are holding quite strictly to \$1.50 for carload lots, f.o.b. mill, and are not making special efforts to secure business. If they succeed in completing the proposed agreement among themselves it is probable that there will be a slight advance in prices, and this fact is probably having some influence with the trade in stimulating business. Small lots from store in New York are held at \$1.65.

Chicago, by Telegraph.—The inquiry for Wire Nails is considerably better, but the situation with regard to prices is not entirely satisfactory. Some mills report that jobbers are placing orders for early delivery, while others complain that they are finding interference with their natural trade from a heavy buyer who evidently stocked up at the late low prices. Quotations on factory lots range from \$1.53 to \$1.60, Chicago, according to the condition of the manufacturing company. Those who are starting up their factories are experiencing trouble in getting Rods, as so many Rod mills have been shut down and stocks of Rods at makers' mills and in consumers' hands are quite light. Jobbers report a good trade in Wire Nails, which is probably due to some extent to the long-talked-of advance in price that now seems to be imminent. They continue to sell small lots at \$1.55 from stock, but will shortly make an effort to advance this rate to \$1.60. They state that manufacturers are slower than ever in shipping some sizes, showing that stocks are badly broken.

Cut Nails.—Business in Cut Nails is moderate, the trade limiting their purchases to early requirements. The market is, however, steady in price, the mills refraining from making special inducements to secure orders. Quotations are on a basis of \$1.05 for carload lots at mill, concessions being made only in special cases and particularly where the average is unusually attractive.

Chicago, by Telegraph.—Manufacturers report a fair business in Cut Steel

Nails and excellent prospects for an enlarged trade. Inquiries have been numerous of late and stocks are found to be so low in dealers' hands that an early movement must soon come. They continue to quote factory lots at \$1.20 to \$1.25. Small lots from stock are selling at \$1.30.

Barb Wire.—This market continues sluggish, with a light demand. There are, however, indications of slight improvement in this regard. Quotations remain on a basis of \$2.45 to \$2.50 for carload lots at mill for Four-Point Galvanized, but in some exceptional cases this figure is slightly shaded.

Chicago, by Telegraph.—The demand is steadily improving. The fall trade may not be so large as usual, but prospects are much better than they have been, and at least a fair volume of business is expected. The manufacturers of high-grade Barb Wire are not all making low prices and claim that they find it unnecessary to do so. Quotations range from \$2.45 to \$2.60 on Galvanized, according to the size of the order.

Cordage.—During the past week there have been no important developments in the Cordage market. The demand is only moderate and prices are maintained on a basis of 8 cents for Manila, 6½ cents for Sisal and 6¼ cents for New Zealand in large lots at factory or New York. On smaller parcels such as are purchased by the trade generally the usual advances are made. During the present month many rumors have been current in regard to Cordage interests and efforts which have been made to come to some agreement in regard to prices. Many of these rumors are entirely without foundation. The fact is that the product of the plants operated by the National Cordage Company is marketed by the receivers, and at prices which are substantially the same as those made by the independent and outside companies. The report referred to in a recent issue that the National Cordage Company had made an arrangement with John Good to restore prices to a basis that would give a difference of 4 cents per pound between the raw material and the finished product turns out to be unfounded. Such a difference is obviously excessive, and an attempt to establish prices on any such basis would unquestionably result in the encouragement of formidable independent competition.

Keystone Padlocks.—E. T. Fraim, Lancaster, Pa., quotes the following discounts on his Keystone malleable iron, steel bronze and brass Padlocks. Terms 30 days net or 2 per cent. discount for cash in 10 days, f.o.b. Lancaster, Pa., or New York City :

	Per cent.
1010 line.....	90 & 40
120 line.....	90 & 15
109 line.....	65
510 line.....	70 & 10
225, 610 and 209 lines.....	70
All other numbers	50 & 5

Self-Heating Washer.—This article was described in a recent issue. It is put on the market by the Self-Heating Washing Machine Company, Evansville, Ind., and is sold to the trade at \$7 50 each, terms 60 days net or 2 per cent. off in 10 days.

Gas and Pipe Pliers.—Barnard's Gas and Pipe Pliers, illustrated in this issue, are manufactured by the Wm. Schollhorn Company, New Haven, Conn., for whom Julius Berbecker & Co., 65 Duane street, New York, are agents. The Pliers are sold at the following list, subject to a discount of 35 per cent. in small quantities, and 40 per cent. discount in gross lots:

$4\frac{1}{2}$	5	7 inch.
\$8.50	9.50	12 per doz.

Glass.—The week has developed no new features in the Glass market unless it is a slight increase in the demand. A moderate demand would naturally exhaust stocks in manufacturers' hands, as production stopped a month ago, and reports indicate that good qualities of single-strength Glass are not in good assortment. It is understood that the Conference Committee representing the Window-Glass manufacturers and workers of the Western district met in Pittsburgh on August 24 to consider the wage scale, and that the workers refused to accept a reduction. The conference then terminated. A small but steady demand has developed for Plate Glass, which the manufacturers consider encouraging. Imported Glass remains as last reported, and quotations on all lines of Glass remain unchanged.

Export Notes.

H. C. A. AYRES, British Consul at Damascus, Syria, makes the following remarks respecting machinery for Turkey, in a recent report to his Government: "I am of opinion that something might be done in the machinery line if proper measures were taken to bring Agricultural and other machines to the notice of the landed proprietors. Catalogues and such methods of advertisement are almost useless; what is required is an agent conversant with the trade, who should take steps to demonstrate to the richer class of landowners the advantages that would accrue from the employment of steam or hydraulic machinery, and press the matter vigorously. Nothing short of this would overcome the *vis inertiae* of the Moslem, and it is certain that if British manufacturers do not take this matter up, Germany will take their place. Indeed, some German machines have already been introduced. Hydraulic Oil Presses and Steam Thrashing and Winnowing machines and mill machinery would undoubtedly be suitable to this country and would prove highly beneficial to purchasers."

The Australian mail which in the regular course would close in New York the night of September 9 now close the night of September 16

instead. This is owing to a change in sailing dates of steamers from San Francisco, which will leave one week later, but every four weeks as heretofore.

In consequence of a change in the sailing dates of the Canadian Pacific Railway Company's steamship line, New York merchants wishing to allow an extra day to insure connections will have to mail their letters one day earlier than usual here for China and Japan via Vancouver, B. C. The post office authorities here having allowed an extra day before, have not as yet made any change as regards closing the mail.

The British Consul at Hiogo, Japan, says that foreign manufacturers and importers who use the decimal and metric systems in their dealings with the natives enjoy much greater business opportunities than those who do not do so.

A German Consul in Algeria reports to his Government that if that country was regularly visited by commercial travelers in all lines of trade they would obtain good results, especially if they came just after the harvest. At present, he says, the Algerian towns are visited by very few agents of business houses.

Organization Among Retailers.

AS WE HAVE ALREADY INFORMED our readers, some associations have been formed among Hardware merchants for the protection of their interests, particularly with a view to preventing interference with their trade by manufacturers and jobbers. Many merchants recognize the desirability of doing something in this direction and yet are at a loss how to proceed, especially as they are aware that there are serious difficulties in the way of forming organizations sufficiently extensive and practical in their operation to accomplish much. Many of them also are so engaged in their own business that they have little time for outside work, of the usefulness of which they are in some doubt. Some merchants who are interested in this matter are endeavoring to awaken an interest in it among the trade at large, inasmuch as they realize that to accomplish much it will be necessary to have the movement in this direction quite general. The call which has been made for a meeting in Chicago, September 20, with a view to forming a national association, will be of interest to the trade, and it is hoped by those promoting the movement that there will be a large attendance.

In this connection the following letter from a prominent house in Switzerland will be read with interest. It will be seen that the trade in that country are suffering much more seriously from the sales of manufacturers and merchants to consumers than are

the Hardwaremen in the United States. The facts given by our correspondent also will be of especial interest, referring as they do to the organization which has been formed for the prevention of this practice:

I have read with great interest your articles about "Sales to Consumers," because the trade in Switzerland suffers under absolutely the same circumstances and of the same illness. We have also the farmers' alliances, who have established warerooms for all kinds of goods. We have now organized, for the protection of the iron-mongers' trade, a Hardware club through the whole of Switzerland, in which all retail and wholesale iron-mongers but a few are members, as also a number of Swiss manufacturers. The committee or board of directors of this club invites the manufacturers and jobbers (in Switzerland and abroad) not to sell to the farmers' alliances and to give a written declaration to this effect. Nearly all the firms have given their assent. We shall see now if we will succeed in our enterprise. We hope so much the more for success because the other trades or branches—grocers, drapers, &c.—seem to be desirous of doing what we have done. The names of the parties who have declined to give us the declaration asked for are communicated in registered letters (they are personal and confidential) to all members of the club, who cancel these firms from the list of their furnishers. By and by we will introduce the same system in regard to parties (manufacturers or jobbers) selling to consumers, whose trade should belong to their nearest located retail merchants. These retail merchants have a right to buy cheaper than consumers, because they have their capital engaged all the time in a stock of goods, while consumers buy goods generally for immediate consumption. In any case manufacturers and jobbers selling to consumers and merchants in the same town should make a difference in favor of merchants and let them have the benefit of this difference.

New Line of Cabinet Locks.

WE HAVE already alluded to the fact that the Yale & Towne Mfg. Company, Stamford, Conn., and 84 and 86 Chambers street, New York, are putting on the market a full line of general Cabinet Locks, and would direct attention to their advertisement in this issue, in which further particulars are given with illustrations of different styles of keys. This company have for many years, as the trade are aware, made the Yale Cabinet Locks, constructed on the well-known system invented by the late Linus Yale, Jr., and the line now announced is an additional one, including numerous varieties of Cabinet Locks not hitherto made by them. The new department is under the superintendence of F. W. Mix, known throughout the trade for his large and valuable experience in this line of manufacture. The quality of the goods is especially referred to as conforming to the high standard of the company's other products. Inasmuch as the accepted forms of Cabinet Locks meet the requirements of the Hardware and furniture trades this new line is identical in construction with those now on the market and

well-known to the trade. In order to facilitate the introduction of this new line the manufacturers have issued a comparative list of numbers, by means of which any dealer can readily find the list number of any Lock made by the Yale & Towne Mfg. Company corresponding to the same Lock as made by other manufacturers. This new departure marks the entrance of the manufacturers into a field which they have not hitherto occupied, and we are advised that the new line of Cabinet Locks will be of the best construction, workmanship and materials, thus maintaining the reputation established by the company for its products.

The Bicycle Display at the World's Fair.

ONE of the most interesting features of the Fair to a very large part of the visitors is the great display of Bicycles. They occupy a great deal of the space in the galleries of the Transportation Building, with a few exhibits located on the ground floor.

THE POPE MFG. COMPANY of Boston, Mass., make a splendid exhibit of Columbia, the preparation of which involved a great amount of labor and expense. The booth, railing, net work and columns are all made of brass, finely polished. The polished wood carpet is of oak and mahogany, while plush chairs, rugs and sofa are attractively scattered about. The company's machines are displayed in exceptional variety. From a light roadster of 19 pounds to a lady's roadster of the most substantial pattern nothing has been omitted. The finishes of maroon, yellow, white, drab, green, black and combinations; saddles of leather in fancy patterns and saddles of worked silk, parts and chains, forming all manner of designs, add materially to the brilliancy of the exhibit. Other features of the display are a large picture of the factories at Hartford, Conn., in a handsome black walnut frame, with gold border, and a large register on the center table, in which visiting wheelmen enter their names and opinions of the goods shown. Across the aisle from the main exhibit is shown the first bicycle made with pedals and ridden in Paris in 1863. Another interesting wheel is the Columbia on which W. W. Windle made his world's records in 1892. Still another curiosity is a Columbia roadster fitted out with a Westinghouse fire extinguisher.

THE GENDRON WHEEL COMPANY of Toledo, Ohio, have an excellent exhibit of their racers, roadsters and ladies' wheels. A large picture shows how perfectly the seat of their wheel is adjusted to the rider's use and comfort. The company call special attention to the pneumatic tire used on their machines—the Ideal, which they refer to as strong, durable and resilient. In case of a puncture 6 inches of the inflation tube can be exposed for repair, the repairing being accomplished with great ease and rapidity.

WM. READ & SONS of Boston and Chicago, although occupying one of the smaller spaces, have placed an attractive collection of their well-known New Mails on exhibition. Among the wheels shown are their road wheels for both sexes, light roadster for gentlemen, and the racing wheel. These are shown in the finishes most popular, including black, maroon enamel and full nickel. The full nickel racer which occupies the center of the exhibit, resting against a magnifi-

cent slab of onyx, attracts a good deal of attention from visitors.

THE OVERMAN WHEEL COMPANY of Chicopee Falls, Mass., make an elegant exhibit. Eleven thousand dollars is the amount said to have been expended on the exhibition. The pavilion, which is one of the largest, is made from mahogany, richly ornamented with pure gold leaf. The floor of the pavilion is covered with Turkish rugs, the ceiling being of terracotta, with Persian blue silk, which sheds a soft luster on the space below where the company's machines are mounted upon mahogany pedestals, palms of different varieties being interspersed among them. In the center of the exhibit, inclosed within a glass case, stands the gold plated "Victor Flyer," valued at \$325. This wheel is heavily gold plated and furnished with ivory handles and patent leather saddle and tool bag. The finishes of the different wheels embrace the full nickel and nickel and enamel. Across the aisle from the main exhibit the many parts of machines are shown in different stages of manufacture. The parts of a complete "D" model Victor are also displayed together. These parts may be put together without being brazed, as they have an all-bright finish.

THE MCINTOSH-HUNTINGTON COMPANY of Cleveland, Ohio, have a very striking exhibit. Entering the Transportation Building by the eastern entrance or "Golden Gate," as it has been appropriately termed, a look toward the gallery shows wax figures of a lady and gentleman riding Sunol Cycles placed above the railing, being some 40 feet from the lower floor. These figures are operated by an electric motor and attract a great deal of comment. Many visitors looking from a distance have supposed them to be real flesh and blood. In addition to a full line of Sunol Bicycles in full nickel, black and white enamels, nickel and black enamel finishes, the company also show two Cryptogear ordinarys of 36 and 44 inch diameter, which may be geared to 60 inches. They are sole agents for these English Cycles in the United States. At one end of the exhibit, inclosed in a handsome showcase, are a full line of Lucas Lamps and sundries, while at the other the Garfield Mfg. Company of Elyria, Ohio, show an extensive line of saddles in morocco and calf of variegated colors. Bicycle agents will be interested in the apparatus displayed for inflating tires, the product of the Bishop & Babcock Company's factory, also of Cleveland.

A. FEATHERSTONE & Co. of Chicago have an attractive pavilion of Georgia pine designed and erected in the Gothic style and draped with portieres, in colors which blend admirably with the natural wood. Encased over the entrances and at the sides are different sized wheels fitted with inflated pneumatic tires. An office and comfortable furnishings are placed at the disposal of visitors, while within a nickel railing which extends around the entire exhibit stand samples of the Road King, Road Queen, Duke, Duchess, Prince, Princess, Royal Middy, Peer and Flying Jib wheels. To a safety whose looks convey the idea that it is far from being 1893's make the oldest pneumatic tire in the United States is attached. Several patches show that the old tire has seen hard service. Special attention has been given to making a good showing of the firm's boys' line of wheels, which includes three different styles.

THE MONARCH CYCLE COMPANY of Chicago have a well arranged exhibit of their road racer, Model B, for general road use by gentlemen and their double

curved frame ladies' wheel, which tips the scale at 35 pounds. Numerous separate parts are displayed, among which are the Binn dust protector and ball holder, the Mannesmann steel tubing and entire frame in an unbrazed state. The handsome finishes in oxidized copper and black oxidized enamel attract much attention. Across the aisle from the main exhibit a number of handsome wheels of the above make in nickel and aluminum finish are displayed.

THE GORMULLY & JEFFREY MFG. Co. of Chicago have made one of the three largest exhibits of Bicycles on the grounds. The company have a handsome Oriental pavilion, backed by an artistically draped plate glass mirror, over which the word "Rambler" is formed of parts of their wheel, while on each side a sample wheel stands out strongly against the plush background. "Distinctly Great" are the words on a placard hanging from one of the G. & J. tires, and distinctly great it certainly is, the tire measuring 10 feet in diameter. This is one of their corrugated pneumatic tires, inflated, and complete with valve and inner tubing. Placed here and there about the exhibit are tasty decorations formed of parts and attachments, and at the south end upon a green panel is displayed every part of the wheel except the tire. While many manufacturers have striven to excel in fancy finishes the manufacturers of the Rambler have been content to enter goods such as are carried constantly in stock, and their full nickel, copper and black enamel finishes show up to excellent advantage.

THE ROUSE-HAZARD COMPANY of Peoria, Ill., have an attractive display of the Cycles made by Rouse, Duryea & Co., of the same city. Their booth occupies a prominent position and bears considerable resemblance to a Singalese hut, abounding with cords and tassels. On the rear wall they have the photographs of prominent Bicycle racers and manufacturers. Rouse-Hazard Company are also showing the first rear chain-driven (Rover pattern) safety ever built. This wheel, which forms a marked contrast to the wheels of modern make next to it, was manufactured in 1878 by the Rudge Cycle Company of Coventry, England, who forwarded it to their American agents, Rouse-Hazard Company, for exhibition at the fair. In addition to handling the English wheel they manufacture the Sylph and Overland, in any and all finishes desired. At their exhibit in the Transportation Building they show samples of trip-lets and tandems manufactured by them, as well as a geared ordinary, of which the front wheel has a diameter of 30 inches and the rear 24. They are extensive dealers in Sanger baby seats for Bicycles. They are just placing in their exhibit their line of '94 saddles, which have many points of excellence. The roadster weighs 1 pound 4 ounces, and the racer a single pound.

THE AMES & FROST COMPANY of Chicago have erected a fine booth, constructed of quarter-sawn oak, with columns and flooring of the same, in which to display the wheels manufactured by them. The net work around the outside is very tasty. The ceiling is especially attractive, comprising as it does the most delicately-tinted stucco work in drab, with gold tracing, the whole illuminated by incandescent lights hanging from chandeliers of neat design. At the back of the display several standing cases inclose different parts and a half dozen single wheels. By the use of their own motor these wheels are caused to revolve, while the lamps suspended from the

ceiling light up the other goods encased as well. The Imperial wheels shown comprise the company's regular roadster, ladies' wheel, racer and combination roadster. Two of their regular road wheels are displayed fitted out for army use. The wheels without equipment weigh 34 pounds, but when equipped for service with rifle and bayonet, knapsack and blanket, all of which fit as if made for the wheel, the total weight approaches 75 pounds. Another Cycle is equipped for signal service with jointed poles fastened in clips at the side, while lanterns and flags are found in bags under the saddle bar and in front of handle. The wheels shown are in black and green enamel and full nickel finishes, although the manufacturers furnish any finish desired.

THE FREEPORT BICYCLE MFG. COMPANY of Freeport, Ill., are showing their Elliptic wheels. Their roadster, for both ladies and gentlemen, is shown, as also their racer. The black enamel, black enamel and nickel and blue and red enamel finishes are exhibited. All of their wheels are secured by the Bicycle gate of their own manufacture, which is one of the simplest gates in use. Separate parts and an unbrazed diamond are shown on a covered board, enabling visitors to note the material and workmanship employed in the construction of their wheels.

THE REMINGTON ARMS COMPANY of Ilion, N. Y., show a number of the safeties they manufacture for men. Among them appears the latest Remington racer, weighing 22 pounds, the fellos of the wheels being of wood instead of steel. It is constructed on the regular Humber pattern, with hollow tubing and round chain. Much study and experimenting has been done in the production of this wheel, and the result is very gratifying. Other wheels shown are their regular roadsters and combination wheel for ladies, with bar for gentlemen's use. Maroon, black enamel and full silver are the finishes used. Especial attention is paid to the dress and chain guard, each consisting of a single piece of perforated steel.

THE ROYAL CYCLE COMPANY of Marshall, Mich., show their several varieties of wheels, including the Royal light roadster, Royal racer, or as it is termed the Gee-whiz, and the Royal Limited, which weighs stripped 27 pounds. They employ the improved Humber chain attachment, detachable rear sprocket and detachable rear cranks $6\frac{1}{2}$ inches throw. They manufacture a high-grade wheel for racing purposes and a lower-priced machine for road use.

ARIEL CYCLE MFG. COMPANY of Goshen, Ind., have ample space in which to make a good display of Ariels, and they have taken advantage of the opportunity, erecting a neat booth, draping it tastily and arranging therein samples of the ladies' wheel, roadster and road racer, which tips the beam at 32 pounds. Nearly all of their wheels are shown in maroon enamel, with which they scored much success early in the present season, although the full nickel and black enamel are also shown. The chief characteristic of this wheel in its construction is the amount of rake given in the frame. They use full nickel tangent spokes and hollow rims.

THE MARION CYCLE COMPANY of Marion, Ind., makers of the Halladay-Temple Scorchers, have an attractive exhibit on the west side of the gallery under the direction of Ralph Temple. The lines of this machine combine the correct position of the seat to handle

bar, easy rake of front and rear fork (seat post tubing). The chain is light and strong, the adjustment new and novel, making a machine that for weight, strength and speed bears testimony to the excellence of material and workmanship.

(To be continued.)

Trade and Finance in Seattle.

FROM A CORRESPONDENT in Seattle, Wash., we have a communication in reply to the reference in a communication which appeared in one of our recent issues in regard to financial disturbance in that city. Our correspondent thus describes the satisfactory manner in which the Seattle banks have stood the financial strain:

Referring to an article under the heading "Condition of Trade," particularly from Portland, Ore., we wish to say while there may be more banking capital in both Seattle and Tacoma than there is in Portland, it is a fact that Seattle in particular has used all of this capital in legitimate enterprises and has succeeded in adding good round profits to the surplus. The fact remains that Seattle has withstood the storm and not one banking establishment in our fair city has failed to meet all demands on it. Our mercantile business is in a satisfactory condition. The Seattle houses in both Hardware and groceries have driven the Portland and San Francisco jobbers out of this market.

Wallace & Sons.

WALLACE & SONS, manufacturers of Brass and Copper goods at Ansonia, Conn., with offices at 29 Chambers street, New York, suspended recently and their affairs were placed in the hands of receivers. Thomas Wallace of Ansonia, the treasurer of the concern, and Robert M. Thompson, president of the Orford Copper Company, have been appointed receivers, both in this State and in Connecticut, on the application of John B. Wallace, the secretary, and U. T. Hungerford, the manager of the New York office. The reason for suspension is given as inability of the company to collect outstanding accounts from customers, on account of the financial stringency, and consequent inability to meet notes falling due in the present month. The liabilities are placed at \$875,000, of which \$450,000 is on open accounts, nearly all of which are past due, and \$425,000 on notes. The nominal assets are put down at \$2,000,000, of which unencumbered property, including rolling mills, wire mills and factory plant at Ansonia, is valued at \$1,000,000, book accounts at \$600,000 and merchandise at \$400,000. It is expected that the suspension will only be temporary, as the assets of the concern largely exceed their liabilities. The business was established in Ansonia in 1848, and incorporated in 1853, with a capital stock of \$100,000.

Trade Items.

THE PRESENT QUARTERS of Farwell, Ozmun, Kirk & Co., St. Paul, Minn., having proved to be inadequate for their large and growing trade, arrangements have been made for the erection of a new building. Every modern improvement that will facilitate the prompt handling and shipping of goods will be employed in the new structure. The new building will occupy an entire block fronting on East Third street, with Broadway

on the west, Pine street on the east, and their own railroad tracks on the north. The site is at present occupied by the warehouse of Mast, Buford & Burwell, which will be torn down as soon as the lease of that concern expires, December 1, 1893. The firm of Farwell, Ozmun, Kirk & Co. was established in 1859, and was incorporated under its present name in 1887. The officers of the firm are as follows: A. M. Ozmun, president; F. P. Strong, vice-president; R. A. Kirk, treasurer; W. T. Miller, assistant treasurer, and F. A. Bostwick, secretary. On November 18, 1891, their stock was completely destroyed by fire. On January 1 following they again resumed business at their present location.

THE CREDITORS of Parkhurst & Wilkinson of Chicago, Heavy Hardware jobbers, met on the 22d inst. Some \$200,000 out of the \$300,000 of unsecured indebtedness was represented. It was unanimously voted to grant two years' extension to the firm.

MERRY & CLARK, 535-547 West Fifteenth street, New York, successors to John Merry & Co., report that they are prepared to offer to the trade two brands of American-made Roofing Plates, manufactured specially for their house—namely, Lion, a high-grade terne, claimed as equal to Worcester, and Phoenix, a terne which they sell in competition with Alloway grade. These plates are made IC, 14 x 20 and 20 x 28.

WE ARE IN RECEIPT of an inquiry in regard to Alexander's Tooth Adjusters and Files for the same, and shall be pleased to have information in regard to the manufacturers from any of our readers who are familiar with the goods.

THE AMERICAN TIN PLATE COMPANY, Elwood, Ind., experienced lately some difficulty with their Welsh tin platers, which has, however, been satisfactorily adjusted. The trouble is said to have been caused over the operation of the automatic tinning machines, the operators employed on the machines demanding to be paid skilled labor wages, and this demand being refused by the firm.

A ST. LOUIS DISPATCH of August 21 announces that the works of the St. Louis Stamping Company, which have been idle for nearly two months, resumed operations. The tin-plate plant started up at the same time.

Manufacturing.

THE PHELPS METAL COMPANY of Syracuse, N. Y., are a new corporation which has been chartered at Albany for the manufacture of Cutlery, Hollow Ware and specialties, with a capital of \$50,000. The directors are E. E. Phelps, Chas. S. Roberts, W. C. Brayton, Frederick A. Paul and Helen A. Palmer, all of Syracuse.

STEVENS & WILLIS, South Braintree, Mass., are at present making a specialty of machine lasting Tacks for the various lasting machines now being introduced, such as the Boston, Hand Consolidated, Copeland and others using a bulk Tack. They are also about to start up their Steel Shank plant, which for a time has been idle.

NICHOLSON FILE COMPANY, Providence, R. I., have resumed operations, with the factory running on short time.

THE WAREHOUSE of the Consolidated Steel & Wire Company at Braddock, Pa., recently destroyed by fire, will be rebuilt.

THE NATIONAL HORSE NAIL COMPANY, Vergennes, Vt., owing in a general way to the depression of business throughout the country, but also, on

account of their feeling of uncertainty in regard to tariff revision, have reduced their scale of wages from 10 to 12½ per cent.

THE WAGES of the 150 molders of the Penn Hardware Company, at Reading, Pa., were reduced 12½ per cent., which the men declined to accept, and quit work.

Price-Lists, Circulars, &c.

THE DEMING COMPANY, Salem, Ohio: New catalogue of Iron and Brass Pumps, Hydraulic Machinery, Pump Supplies, &c. This is a handsomely printed and well illustrated volume of 232 pages, strongly bound in heavy boards, containing full price-lists, code words, descriptions and illustrations of Cistern and Pitcher Spout Pumps, Hand and House Force Pumps, Deep Well Pumps and Cylinders, Windmill 3-Way Pumps and Standards, Artesian Well Pumps and Cylinders, Rotary and Double Acting Pumps, Railroad and Factory Pumps, Spray Pumps and Appliances, Garden and Irrigating Pumps, Well Tools and supplies, Hydraulic Rams, Hydraulic Pumping Motors, Hydraulic Pressure Test Pumps, &c. The general Western agents of the company are Henion & Hubbell, 55 and 57 North Clinton street, Chicago.

RICHARDSON BROTHERS, Newark, N. J., operated by the National Saw Company, New York: Catalogue under date, August, 1893. The line includes Hand, Panel, Rip, Back, Compass and Butcher Saws, Pruning, Plumber and Ship Carpenters' Saws, Turning, Felloe, Butcher and Billet Webs; Plastering and Brick Trowels; Turning Saws, framed Wood Saws, Circular, Mill and Mulay Saws, Gang, Drag and Pit Saws, Segment Saws, Cross Cut, one and two man; Band Saws, Saw Mandrels, Swages, Slaw Cutters, Currier Blades, &c. The book contains a File list, representing the line of Files manufactured and sold by the above firm. The catalogue is accompanied by a discount sheet, by which all former quotations are canceled.

SWANN, WHITEHEAD & CLARK, manufacturers of Lamps in metal, onyx and porcelain: Illustrated descriptive catalogue of Banquet, Table, Vase, Library and Hall Lamps. The pamphlet is printed in various colors. Attention is called first to the attractiveness and intrinsic merit of the goods, and second, to the wearing qualities. Views of the works showing the exterior and interior are given at the beginning and end of the book. This plant is operated by the American Lamp & Brass Company, Trenton, N. J.

TAYLOR BROTHERS COMPANY, Rochester, N. Y.: Thermometers, &c. Part 5, supplement to 1892 catalogue, under date August, 1893, is devoted to new patterns added to their line since the publication of their 1892 catalogue. Illustrations show Thermometers with black oxidized scale, aluminum scale, magnifying mercury or spirit tubes, fancy carved house or cabinet Thermometers, fancy metal frame house Thermometers; also porcelain scale house and show Thermometers.

WESTERN BLOCK COMPANY, Lockport, N. Y.: Illustrated catalogue and price-list of Wood, Wrought Iron and Steel Tackle Blocks, Anvil brand. In connection with the catalogue the manufacturers state that their regular rope iron-strapped Blocks are now made with oval edge shells; that they have recently completed patterns for a full

line of five-roll roller bushed Sheaves; that they have added a line of ash and lignumvitæ shell Yacht Blocks, and that they make a specialty of outfits for vessels.

C. SIDNEY SHEPARD & Co., Chicago, Ill.: Fall circular of seasonable and other goods. Illustrations are shown of Coal Vases, Fire Shovels, Blower Stands, Elbows, Stove Pipe, Stove Boards, Iron Hollow Ware, Polish, Lanterns, Oil Cans, Tin Plate, Sheet Iron, &c.

CLARK BROS., 43-45 College place, New York, whose plant is operated by the American Lamp & Brass Company, Trenton, N. J.: Illustrated descriptive catalogue printed in several colors, showing Table, Boudoir, Banquet, Library, Hall and College or Student Lamps. On the cover is given an exterior view of the works, while nine interior views in the front portion of the pamphlet afford something of an idea of the detail of the manufacture, packing and shipping of goods.

GRAND CROSSING TACK COMPANY, Grand Crossing, Chicago, Ill.: Saddlery and Carriage Hardware list of Tacks, Nails, &c. The catalogue is for the use of the saddlery and carriage trades, and omits the goods handled by shelf Hardware jobbers, thus saving the saddlery and carriage Hardwaremen the trouble of looking through a catalogue containing goods they do not carry.

THE ELLIOTT & REID COMPANY, Richmond, Ind.: Portable Corn Cribbs. These are made of Richmond Fence, circular or oblong in form, each Crib being furnished in two sections—a lower and an upper one. To avoid high shoveling the lower section is filled first, after which the upper section is set within it.

UNION METALLIC CARTRIDGE COMPANY, Bridgeport, Conn.; New York and San Francisco: Ammunition. Their price-list, under recent date, is devoted to paper and brass Shot Shells, Gun Wads, Primers, Percussion Caps, Loaded Shells, &c. The book is of convenient size, elegantly printed, and well arranged.

CHANDLER & FARQUHAR, Boston, Mass.: Tools and supplies for machinists, carpenters, blacksmiths and amateurs, and for all kinds of metal workers. The catalogue contains 125 pages, fully illustrated, giving prices and descriptions of the above goods. A feature is also made of tools and supplies for electricians.

J. H. LAU & Co., 75 Chambers street, New York: Guns, Revolvers, Ammunition, Sporting and Fencing Goods: Illustrated catalogue and price-list of Shotguns, single and double barrels, Rifles, Revolvers, Reloading Tools, Gun Implements, Calls and Whistles, Swords, Rapiers, Masks, Canvas and Leather, Sportsman's Goods, Police Equipments, Dog Furniture, Gun Material, Powder Flasks, Game Bags, &c. This house are sole agents for Braun & Bloem's Pin-fire Shells, Ball and Shot Caps; also Lefauchaux Cartridges.

BOAS BROTHERS, 231-235 Greenwich street, New York: German Enamelled Housekeeping Ware: Illustrated catalogue and price-list of decorated specialties, showing Coffee and Tea Sets, with Trays, Coffee and Tea Pots, Dinner and Pie Plates, Serving Trays, Cups and Saucers, Egg and

Drinking Cups, Soup Tureens, Butter Dishes, Toilet Sets, Toilet Stands, Cuspidors, Basins, Slop Jars, &c. These goods are carried in stock and can be supplied in the following decorations: Imitation of marble on both blue and white ground. Decoration 1 covers striped articles, in Tournay, Japanese and Greek designs, and Decoration 2, floral, fleur-de-lis and Tonkin designs on white and blue background, with gold flowers and stripes.

It Is Reported—

That the large wholesale Hardware house of William Stairs, Son & Morrow, Halifax, N. S., was destroyed by fire on the 21st inst. The loss is estimated at \$120,000; insurance on stock and building, \$80,000.

That the Agricultural Implement warehouse of T. W. Baird & Son, Steele City, Neb., was burned out on the 16th inst. The loss is nearly covered by insurance.

That the Hardware store of A. H. Brill, Oxford, N. Y., was recently damaged by fire.

That John S. Jenness, Hardware dealer, Bangor, Maine, has disposed of his entire stock of Hardware. The Jenness Hardware store has been one of the familiar features of Main street, Bangor, for 60 years, the business having been started in 1833 by Thomas Jenness and Leonard March.

That Judge Burns on the 21st inst. authorized George L. Robertson, as signee of Snyder & Willie, Hardware merchants, to replenish the stock and engage assistants.

That the Gun store of Carl Heinrich, Fremont, Neb., was entered on the 19th inst., and Revolvers, Knives and Cartridges to the amount of \$30 taken. Entry was made through the back door by removing a panel.

That J. Y. Patterson of Martin's Ferry, West Va., has given possession of his stock of Hardware to George K. Wheat of Wheeling.

That the Hardware store of J. F. Berner, 515 William street, Buffalo, N. Y., was damaged by fire on the 21st inst. The explosion of a lamp was the cause of the fire, and \$2000 damage was done. The loss is fully covered by insurance.

That Henry S. Spooner and Frank B. Ayres have formed a copartnership under the firm name of Spooner & Ayres, and have purchased the Hardware store of Sayer & Sayer, Middletown, N. Y. Messrs. Spooner & Ayres have had many years' experience in the Hardware business, and both have for a long time been employed in the store of George A. Swalm & Son.

That Stidworthy & Thorp's Hardware store, at Sioux City, Iowa, was robbed on the 16th inst.

That the C. C. Clement Hardware Company, Winona, Minn., have been incorporated. The capital stock is \$25,000, with \$11,000 paid in. The officers of the company are as follows: H. J. Willis, president; C. C. Clement, vice-president and general manager, and H. L. Smith, secretary and treasurer. The company will open for business on September 1.

That Jones Bros.' Hardware store, at Richmond, Ind., was burned out on the 18th inst. Loss, \$30,000; insurance, \$22,000.

That the Hardware store of F. A. Pruden, near the Nypano station in Burgh Hill, Ohio, was burglarized on the 22d inst.

That E. W. Wood's Hardware store, at Northboro, Mass., was entered by

burglars on the 18th inst. and \$150 worth of goods stolen.

That John G. Jakobe, Hardware and Tinware dealer, Kansas City, Mo., who recently assigned for the benefit of his creditors, has again taken charge of his business, the assignee filing a deed of transfer of the stock. The business was found to be in good condition, and Mr. Jakobe was pronounced amply prepared to meet his creditors dollar for dollar.

That Charles Fox's Hardware store at Cobb, Wis., was partially destroyed by fire on the 15th inst. Mr. Fox was seriously burned while trying to stay the flames.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Dullness has been the most conspicuous feature of the market for the general line of Paints and Colors. A few lines of bulk goods used by grinders, as, for example, foreign Red Lead, Litharge and Ochres, have been taken to a fair extent for autumn delivery, but business in these, as well as in prepared goods, has been hardly up to the average for this season of the year. As usual on a slow market, prices are more or less irregular, with some particularly low figures made to buyers who are in a position to make prompt cash payments. However, no radical changes have taken place and the general market shows as good form as could be expected in the face of existing trade conditions.

White Lead.—No change whatever comes to the surface, as far as sales and demand are concerned. Large jobbers observe caution in placing orders, and the smaller trade purchase only as stocks may have to be replenished to meet current demands. Prices are still somewhat irregular, but the list of the leading producers is not deviated from to much, if any, greater extent than for some time past. The inferior and mixed Leads are more variable in price, as well as in actual worth, but seem to hold their place in the current distribution.

Red Lead and Litharge.—Liberal sales latterly have caused importers of German Red Lead to withdraw late extreme lowest prices for lots for future delivery, and to that extent the market is firmer. There are, however, few, if any, buyers at advanced quotations. American brands are without change in price and find rather slow sale. Litharge is moving in moderate quantities only and chiefly at old prices.

Orange Mineral.—French brands have continued to meet with comparatively good sale, at quite steady price, and the movement in German brands is sufficient to keep the market for the same remarkably steady. Domestic is without change in value and meets with only fair sale for the season.

Zincs.—While not reflecting quite as good business as manufacturers experienced during the previous week, most accounts are to the effect that orders have quite equaled expectations and that there are enough inquiries to encourage expectations of a good general movement during the next 60 days. Prices are still somewhat uneven, but not really lower than they were at the beginning of the month. Foreign Zincs sell slowly in small quantities at old prices.

Colors, &c.—There is no change in the condition of the market for the more staple lines of Dry or Oil Colors. Business has continued moderate, new

orders are almost invariably for moderate quantities and prices fluctuate within narrow bounds. Practically the same remarks fittingly apply to the market for the better class of ready-mixed Paints.

Miscellaneous.—Chalk, Whiting, Paris White and Putty have remained in a quiet condition and prices remain almost stationary throughout. Barytes, China Clay and Talc barely hold their own in price and are selling rather slowly.

Oils and Turpentine.

The prominent features in the Oil trade have been a further decline in prices of Linseed Oil and a sharp drop in Cotton-Seed products, the former due to sharp contest between conflicting interests among crushers and the latter to the near date at which new season Oils will be ready for market. In other branches of the trade there has been hardly any movement. Prices have remained almost stationary throughout; the demand has been flat, and nothing has occurred calculated to stimulate purchases or force sales.

Linseed Oil.—Raw Oil manufactured from American seed is lower, with city crushers offering at 43¢. Boiled Oil is correspondingly lower, or at 46¢. Some out-of-town crushers, it is understood, have shaded those prices in order to secure ready funds. Upon the whole, the market presents a demoralized appearance. Cheaper raw material, want of money in some quarters and aggressive action by interests that seek to form a consolidation of all crushers are the disturbing features.

Cotton-Seed Oils.—Prices are lower all along the line, and the market is weak and unsettled. Low rates at which contracts for coming season crop have been placed was a disturbing feature, and absence of export demand or other than very moderate home-trade inquiry were the influences leading to the result. New crop prime quality crude Oil was offered at 30¢ for delivery next month. Prime quality old Summer Yellow sold at 39¢, and prime Summer White at 44¢ @ 45¢ in ordinary quantities. Business in the New York market has been dull and the demand is moderate, but some good sales have been made at producing point of new Yellow, for near future delivery, to large Western consumers.

Lard Oil.—Stiffer prices for raw material have served to strengthen the tone of the market for Oil, but the demand shows little or no improvement, and on prime quality, present make, 65¢ @ 67¢ seem to be the ruling rates. Only a strictly routine business has been effected.

Prize Competitions.

Prize Competition No. 27 (Reopened).

Local Associations of Merchants.

This competition closed July 8, but in view of the exceptionally few replies which have been received from the trade and the importance and practical nature of the subject, we have reopened it, and extend the time up to which responses will be accepted to September 16.

Some points in regard to the subject appeared in the announcement concerning the competition in our last issue, and will probably be of service to those who are intending to compete.

The committee to whom the papers in Competition No. 24 were referred have awarded the prizes as follows:

First prize to C. T. ROSENTHAL.
Second prize to ROSS F. RAINEY.
Third prize to J. E. JANSSEN.

Improved Bit Braces.

The accompanying cuts represent improvements in bit braces put on the market by the Amidon Tool Corporation, 1451 Niagara street, Buffalo, N.

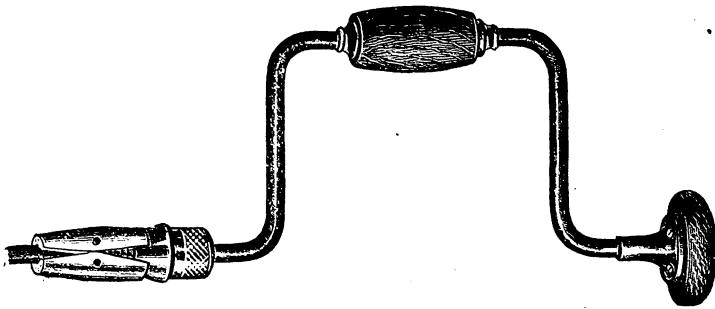


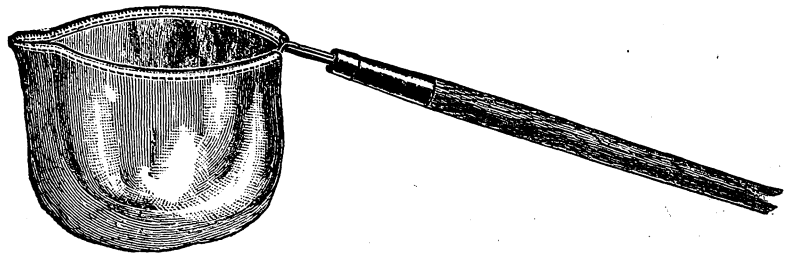
Fig. 1.—Amidon's Perfection Bit Brace.

Y. It is explained that with the Perfection Brace, Fig. 1, an enlarged view of the jaws of which is given in Fig. 2, it is only necessary to revolve the knurled cylinder or nut at the end of the jaws to secure a firm grip on the bit, which will not loosen by backward motion; also that the annoyance of loosing, bending or breaking the jaws is obviated by the simple and powerful manner in which the brace is made. The point is made that no spring is necessary to open the jaws, as they are always ready to receive the bit by simply grasping the chuck in the hand, and that the bit is held by the combined effort of a square socket with self-centering and grasping jaws, resulting in simple construction on account of the absence of springs and skeleton sockets. The ball-bearing attachment, shown in Fig. 3, is used in connection with Amidon's Second Im-

Gray Fruit Picker.

The Cleveland Novelty Company, Cleveland, Ohio, and the Ross & Fuller Association, 33 Chambers street, New York, are introducing the above article, as illustrated herewith. The handle is

of hardwood, with a galvanized frame and canvas pocket; the length over all being 11 feet 2 inches. The manufacturers state that with it fruit can be



Gray Fruit Picker.

picked in a circle of 26 feet in diameter, without bruising; that the picker is light, inexpensive and a great saver of labor. It is designed for picking

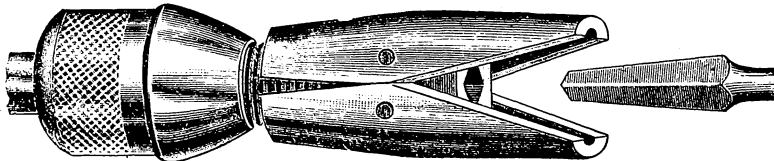


Fig. 2.—Enlarged View of Jaws.

proved Barber brace. The double steel ball-bearing attachment is referred to as securing a ball bearing in clearing as well as in driving the bit, and as being fully protected, absolutely dust

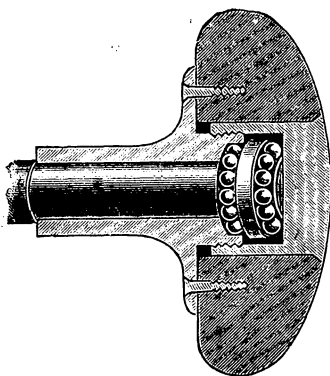


Fig. 3.—Amidon's Second Improved Barber.

proof and applied to the proper place. Attention is called to the manner in which the head is secured to the sweep.

fastener, as herewith shown. As illustrated in Fig. 1, a piece of brass tubing is inserted in the outside casing A, and

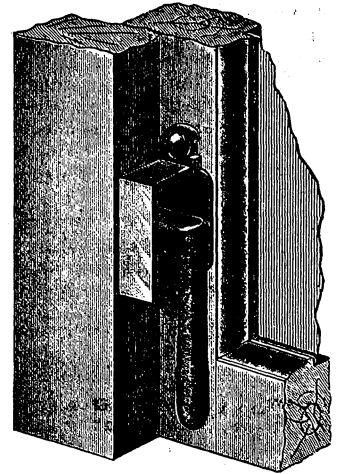


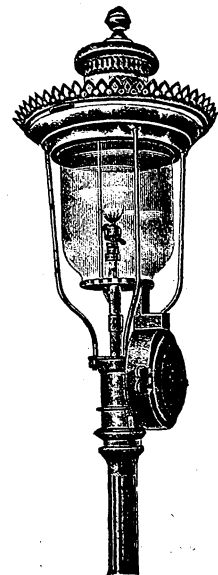
Fig. 2.—Storm Window Fastened.

the bracket B is attached to the storm window. To fasten the window in place the lever is slipped through the bracket,

the pin C entering the hole A, the cam D engaging with the bracket B, thus making a tight joint between the casing and the storm window. The point is made that after the fastenings are once put on the labor of putting on or taking off storm windows is greatly reduced. The window in place is shown in Fig. 2.

American Automatic Time Lighter.

The American time-lighting device, illustrated herewith, is being intro-



American Automatic Time Lighter.

duced by George H. Gregory, 35 Arch street, Boston. The lighter is described as consisting of an eight-day clock movement, inclosed in a box, the pis-

oranges, apples, peaches, pears, apricots, plums, &c.

Wooster's Storm Window Fastener.

F. V. Wooster, 66 Beverly street, Boston, Mass., is introducing the above

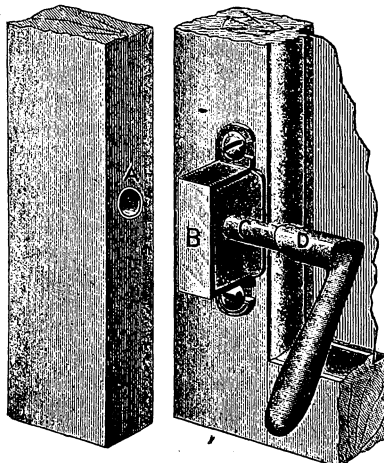


Fig. 1.—Wooster's Storm Window Fastener.

ton valve on the self-lighting gas burner being controlled by the mechanism in the box. The pilot flame system is employed in the arrangement, with specially designed appliances for protecting the flame from being extinguished. A feature of the device is the piston valve, situated inside the street lamp globe; the valve, it is stated, being selected on account of the evenness of its movement, and because of its being wholly unaffected by atmospheric

placed pierces and opens the hole without cutting out any of the stock, leaving the belt, it is stated, as strong at the hole as elsewhere. The point is made that the construction of the pliers is such as to insure punching the hole in the center of the belt. On the other side of the opening is a cutter which works simultaneously with the punch, and at such a distance from it that the hole is at a proper distance from the end of the belt for inserting

double that of a single-spring machine of equal size. The point is made that the power of the springs is greatest at the closing point, and decreases gradually as the door is opened. The necessary power is obtained by winding the springs at B and J, Fig. 1, and the rod G is adjusted to the necessary length by the thumb screw H. The spring chamber and checking chamber are continuous, and both are filled with liquid to constantly lubricate the

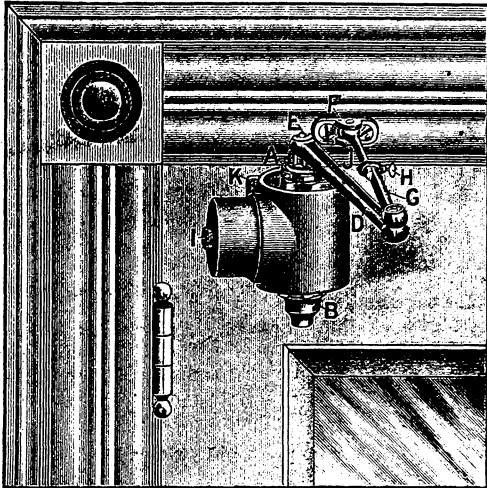


Fig. 1.—Corbin's Liquid Door Spring and Check.

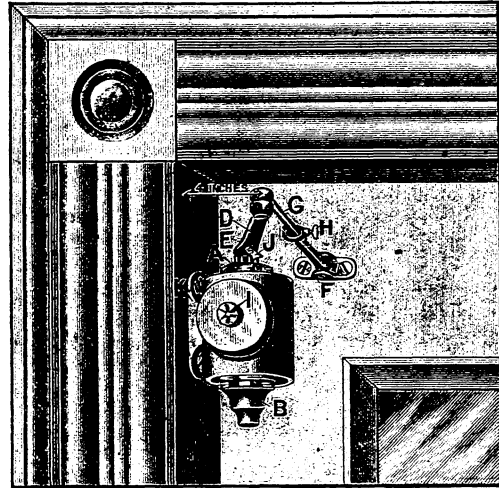


Fig. 2.—Spring and Check on Left-Hand Jamb.

changes. It is explained that the only attention the lighter requires is a weekly winding of the clock movement, and that it lights the lamp at the required time and extinguishes it at daybreak. The point is made that in this way many times its cost is saved by economy of gas, aside from the expense and trouble of lighting and extinguishing the light daily by man or boy. The manufacturer claims that the machine can also be used for operating night lights in banks, offices, stores, &c., for controlling electric currents either for power or light, and for any purpose where a movement at any future time is desired.

Sewing-Machine Pliers.

The accompanying cut represents sewing-machine pliers manufactured by the Wm. S. Hollhorn Company, New Haven, Conn., and offered to the trade by the Sewing Machine Supplies Com

pany, Boston, Mass. It combines parallel pliers, belt punch and cutter. In operation round belts for driving sewing machines, light machinery, ventilators, &c., are punched and cut by one closing of the handles. The pointed awl which passes through the opening in which the end of the belt is

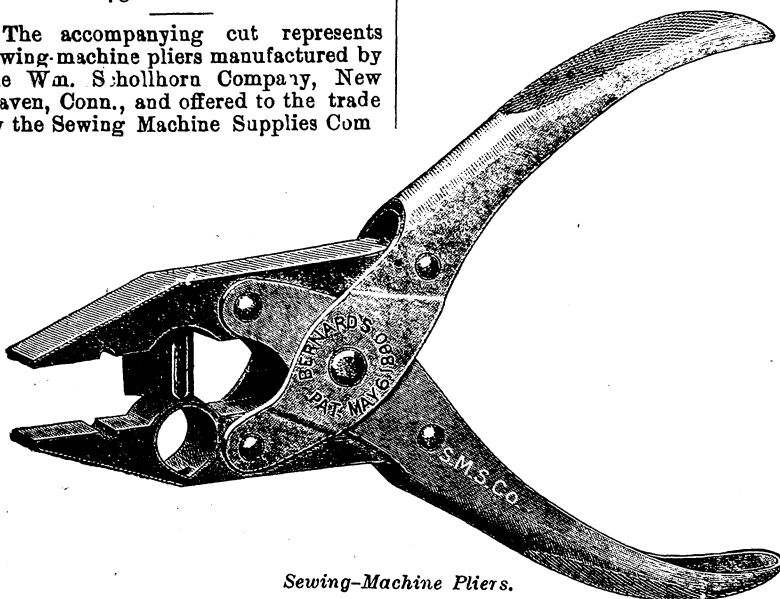
Corbin's Liquid Door Spring and Check.

P. & F. Corbin, New Britain, Conn., and 24 Murray street, New York, are putting the above article on the market as illustrated in the accompanying

the belt hook. There is a groove in each jaw just forward of the punch and cutter for clinching the hook in the belt. The plier is made in 5 inch size only, and is referred to by the manufacturers as useful as a plier, independent of the punch and cutter. It is stated that the parts are interchangeable and that the cutter or punch can be readily replaced by the use of a screw driver.

Kegler's Chain Pump.

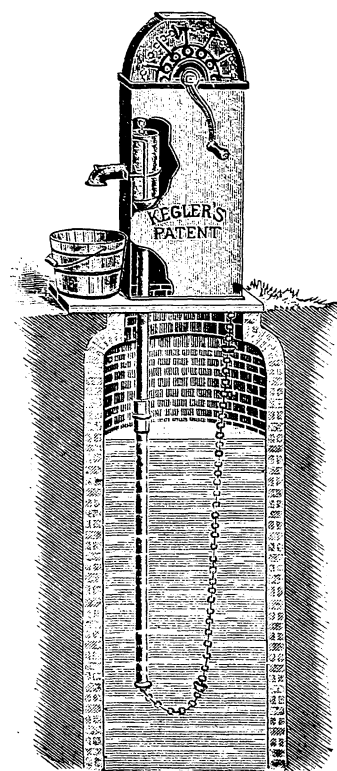
The accompanying illustration represents the above article as put on the



Sewing-Machine Pliers.

cuts. The device has two steel springs, one in each end of the case; it is therefore suitable, it is explained, for both right and left hand doors or jambs without change. It is further explained that either spring can be used alone or both can be used at the same time, making the range of power nearly

double that of a single-spring machine of equal size. The point is made that the power of the springs is greatest at the closing point, and decreases gradually as the door is opened. The necessary power is obtained by winding the springs at B and J, Fig. 1, and the rod G is adjusted to the necessary length by the thumb screw H. The spring chamber and checking chamber are continuous, and both are filled with liquid to constantly lubricate the



Kegler's Chain Pump.

market by the Bellevue Pump Company, Bellevue, Iowa. The manufacturers claim that the pump curb, which

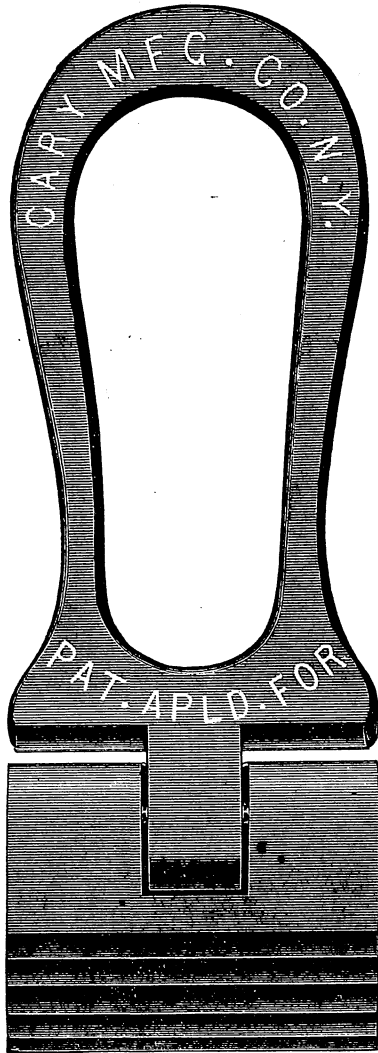


Fig. 1.—Cary's Box Strap Stretcher.

is all iron, galvanized, has a top or cap, so arranged as to prevent the spattering of the wheel getting outside, or rain

worn can easily be replaced by new ones; that the curb will not rust, rot nor accumulate filth; that it weighs 10 pounds less than the ordinary wood curb; that it is narrow at the top and wide below to prevent ice accumulating, and that the curb is not easily dented, as the sheet iron is tightly stretched.

The galvanized-iron tubing has a reservoir $3\frac{1}{2}$ inches in diameter at the top to prevent waste of water, and the upper section of the pipe is made on a taper to allow a space between the bucket and the inside of the tubing below the frost line, to render it anti-freezing. The tube is connected by couplings with a leather washer to make it water tight and easy to couple. The claims are made that the tubing weighs $\frac{1}{2}$ pound to the foot, and does not become saturated with water; that it is easily taken out and replaced when the cistern is to be cleaned; that it lasts longer than wood tubing and that under porches and under low roofing short pieces connected with couplings may be used.

Cary's Box Strap Stretcher.

Cary Mfg. Company, 5 to 9 Elm street, New York, are introducing this article, as shown in Fig. 1. The tool is made of malleable iron, with a steel pin on which the jaw and the handle hinge. Fig. 1 shows the tool full size, and Fig. 2 shows it in use. The manufacturers state that for the purpose of more clearly illustrating its use, the band is shown quite a distance from the edge of the box, instead of near the edge, as applied when strapping a case. In operation, after the strap has been fastened with a nail at one end, the tool is slipped over the band sideways at the opposite side of the case, and the handle is drawn down until the jaw, which is on an eccentric, grasps the band between it and the handle and holds it down firmly. The packer's arm is rested on the handle while a nail is held in the hand and driven home. As the other sides of the case are strapped the tool is used in the same manner. The point is made that the tool is strong and durable, and so light in weight that a

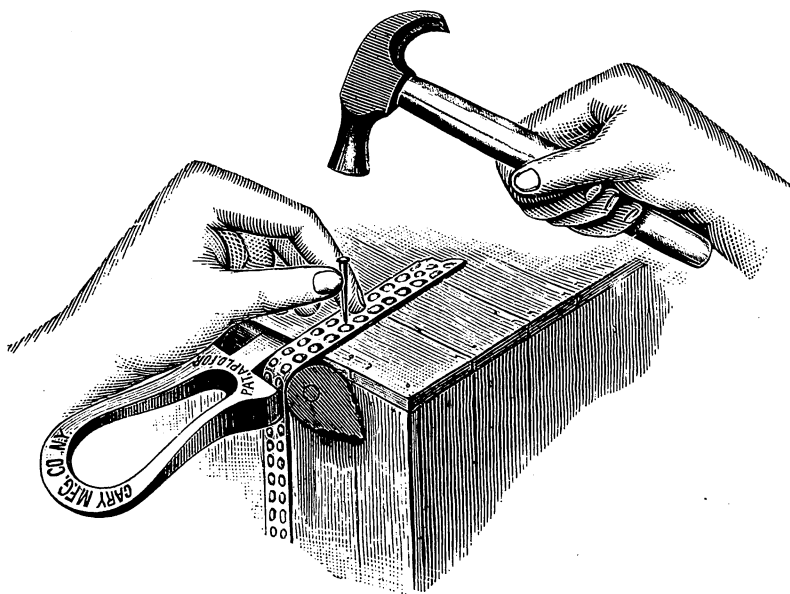


Fig. 2.—Stretcher in Use.

water getting inside; that the noiseless fixtures are fastened on the upper rim of the curb by small bolts, which when

packed may have the handle attached to his wrist by a strap, leaving the hand free when not using the tool, and still

have the stretcher in position to grasp the handle when desiring to use the tool.

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Current Hardware Prices.

AUGUST 30, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic doz \$3.00, 38¢
Excelstor doz \$10.00, 50&10&22
North's list net @ 10 %
Zimmerman's—See Fasteners Blind.

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—

Eagle Anvils, 9" x 9" 15&15&25
Peter Wright's 11&11
Armstrong's Mouse Hole 10&10
Am. Wrought Horsehoe brand 11&11
Trenton 10&10
Wilkinson's 10&10
Moore & Barnes Mfg. Co. 38¢

Anvil Vise and Drill—

Millers Falls Co., \$18.00 20¢
Cheney Anvil and Vise 25¢
Allen Anvil and Vise \$3.00 40&10
Star 45&5

Apple Parers—See Parers, Apple, &c.

Augers and Bits—

Common Augers and Bits 70&70&10
Boring Machine Augers 70&70&10
Car Bits, 12-in. twist 50¢
Russell Jennings' Augers and Bits 25&10
Jennings' Pattern Car Bits 40¢
Jennings' Pattern Auger Bits 60¢
Snell's Bits 60&5
C. E. Jennings & Co., No. 10, extension lip 40¢
C. E. Jennings & Co., No. 30 80¢
C. E. Jennings & Co., Auger Bits, 32¢, 32¢, 32¢, No. 5, 5¢; No. 30, \$3.50, 25¢
Lewis' Patent Single twist 45¢
Pugh's Black 20¢
Pugh's Jennings Pattern 30¢
L'Hommedieu Car Bits 15&10
Forster Pat. Auger Bits 15¢
Cincinnati Bell-Hangers' Bits 30&10

Bit Stock Drills—

Morse Twist Drills 50&10&5
Standard 50&10&5
Cleveland 50&10&5
Syracuse, for metal 50&10
Syracuse, for wood (wood list) 30&30&5
Cincinnati, for wood 30&10
Cincinnati, for metal 45&10

Expansive Bits—

Clark's small, \$18; large, \$20, 35¢&35&10
Ives' No. 4, doz. \$50 40¢
Swan's 40¢
Steer's, No. 1, \$20; No. 2, \$18 35&40
Stearns' No. 2, \$48 20¢

Gimlet Bits—

Common gross \$2.75 @ \$3.25
Diamond doz \$1.25 40&10
Bee 25&25&5
Double Cut, Shephardson's 45&45&10
Double Cut, Ct. Valley Mfg. Co. 30&10
Double Cut, Hartwell's gross \$10.00, 40&10
Double Cut, Douglass' 40&10
Double Cut, Ives 60&60&10

Hollow Augers—

Ives' French, Swift & Co. (Beecher) 38¢
Douglass' 40¢
Bonney's Adjustable, doz. \$48 50¢
Stearns' 20&10
Ives' Expansive, each \$4.50 50&5
Universal Expansive, each \$4.50 20¢
Wood's 25&25&10
Cincinnati Adjustable 25&10
Cincinnati Standard 25&10

Ship Augers and Bits—

L'Hommedieu's 15&10@15&10&5
Watrous' 25&25&10
Snell's 25&25&10
Snell's Ship Auger Pat. Car Bits 15&10@15&10&5

Awl Hafts—See Hafts, Awl.

Awls—

Awls, sewing, Common gr. 85¢@90¢
Awls, Should. Peg gr. \$1.50@1.55
Awls, Pat. Peg gr. \$1.50@1.55
Awls, Shouldered Brad. gr. \$1.30@1.40
Awls, Handled Brad. gr. \$2.50@3.00
Awls, Handled Scratch. gr. \$4.00@4.50
Awls, Socket Scratch. doz. \$1.10@1.20

Awl and Tool Sets—See

Sets, Awl and Tool.

Axes—

Plain. Beveled.
First quality, best brands \$7.00 \$7.50
First quality, other brands 6.50 7.00
Second quality 5.50 6.00

Axle Grease—See Grease, Axle.

Axles—

No. 1 3/4" @ 4 1/2", No. 2, 5" @ 6 1/2"
Nos. 7 to 14 60&10 1 1/2 cash
Nos. 15 to 23 57¢ 7 1/2
Nov. 19 to 22 7 1/2
Concord Axles, loose collar 4 1/2 @ 6 1/2
Concord Axles, solid collar 5 1/2 @ 7 1/2
National Tubular, Self Oiling 33¢ @ 33 1/2 @ 5 1/2

Bag Holders—See Holders, Bag.

Balances—

Spring Balances 40¢
No. 2000 20 30
Chatillon, doz. \$0.80 0.95 1.75 net
Chatillon Straight Balances 40¢
Chatillon Circular Balances 50&10

Barb Wire—See Wire, Barb.

Bars—

Crow—
Cast Steel doz. \$3 1/2
Iron, Steel Points doz. \$3

Basins, Wash—

Standard Fiberglass, No. 1, 10 1/2-in., \$1.80;
12-inch, \$2.00; 13 1/2-inch, \$2.50; 15-inch,
\$3.00.

Beams, Scale—

Scale Beams, List Jan. 12, '82, 50&10@
Chatillon's No. 1 50&10&5
Chatillon's No. 2 50¢
Custer's 38¢

Beaters—

Egg—
Dover doz. \$1.00 @ \$1.20
Duplex (Standard Co.) doz. \$1.00
Dover (Standard Co.) doz. \$1.00
Duplex Extra Heavy (Standard Co.) doz. \$3.50
Bryant's gross \$14.00
Double (H. & R. Mfg. Co.) gross, No. 0
\$12.00; No. 1, \$15.00; No. 2, gross \$36.00
Eury (H. & R. Mfg. Co.) gross \$12.00
Triple (H. & R. Mfg. Co.) gross \$16.50
Spiral gross \$4.25 @ \$4.50
Improved Acme (H. & R. Mfg. Co.) gross \$9.00
Silver & Co. doz. \$5.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, \$1;
No. 2, \$2

Bells—

Cow—
Common Wrought 60&10
Western, Sargent's list 70&10
Kentucky Star 20&10
Eury (H. & R. Mfg. Co.) 70&10
Kentucky Sargent's list 70&10
Kentucky Durham 70&10
Dodge, Genuine Kentucky 70&70&10
Texas Star 60&10@50&10&5

Door—

Gong, Abbe's 38¢@10¢
Gong, Yankee 45¢@10¢
Gong, Barton's 40&10@50¢
Crunk, Brooks' 50&10&22
Crunk, Cone's 10¢
Crunk, Connell's 20&10
Lever, Sargent's 60&10
Lever, Taylor's Bronzed or Plated, net
Lever, Taylor's Japaned 25&10
Lever, E. & E. Mfg. Co.'s 50&10&22
Pull, Brooks' 50&10&22

Electric—

Wollensak's 20¢
Bigelow & Dowse 20¢

Hand—

Light Brass 70&10@70&10&5
Extra Heavy 70¢
White 70¢
Silver Chime 38¢@10¢
Globe Cone's Patent 25&10@35¢

Miscellaneous—

Call 45¢@50¢
Farm Bells 30¢@35¢
Steel Alloy Church and School Bells 40¢

Bellows—

Blacksmiths' 60&10&5@60&10&10
Molders' 40&10@50¢
Hand Bellows 40&10@50¢

Belting, Rubber—

Common Standard 75¢@75&10
Standard 70&5@70&10
Extra 60&10@60&10&10
N.Y.B. & P. Co., Carbon 60¢@60&5
N.Y.B. & P. Co., Diamond 50¢@50&5
N.Y.B. & P. Co., Para 40¢@40&5

Bench Stops—See Stops, Bench

Benders and Upsetters, Tire—

Stoddard's Lightning Tire Upsetters 15¢
Barber's Perfect Tire Bender 15¢
Green River Tire Benders and Upsetters 20¢

Bits—

Auger, Gimlet, Bit Stock Drills, &c.,
see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Cleveland Block Co., Mal. Iron, 6" @ 6 1/2" @ 10¢
Moore's Novelty, Mal. Iron, 6" @ 6 1/2" @ 10¢
Sears & Steel Tackle Block 25¢
See also Machines, Hoisting.

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84 75&10&5@80¢
Genuine Eagle, Norway, list Oct. '84 80&5@80&10
Eagle, Norway, list Oct. '84 80&5@80&10
Phil. pattern, list Oct. 7, '84 80¢
R.B. & W., old list 70¢
Machine, list Jan. 1, 1890 80&10
Bolt Ends, list Jan. 1, 1890 80&10

Door and Shutter—

Cast Iron Barrel, Square, &c. 70&10
Cast Iron Shutter Bolts 70&10
Cast Iron Chain (Sargent's list) 65&10
Ives' Patent Door Bolts 60&10@60&10&5
Wrought Barrel 70&10@75¢
Wrought Square 70&10@75¢
Wrt Shutter, all Iron, Stanley's 60&10@60&10&10
Wrt Shutter, Brass Knob 50¢@50&5
Wrt Shutter, Sargent's list 60&10
Wrt Sunk Flush, Sargent's list 60&10
Wrt Sunk Flush, Stanley's list 50&10&5
Wrt B. K. Flush, Common 55&10

Stove and Plow—

Stove 60&10@60&10&5
Plow 60&10&50@60&10&10
R. B. & W., Plow 55¢

Tire—

Common, list Feb. 28, '83 65¢@65&5
Port Chester Bolt and Nut Company 65¢
Empire list Feb. 28, '83 65¢
Keystone, Philadel., list Oct. '84 80¢
Norway, Phila., list Oct. '84 75¢
American Screw Company 75¢
Norway, Phila., list Oct. 16, '84 75¢
Eagle, Phila., list Oct. 16, '84 80¢
Philadel., list Oct. 16, '84 80¢
Bay State, list Feb. 28, '83 65¢
R. B. & W., Philadel., list Oct. 16, '84 80¢

Borers, Tap—

Common and Ring 20&10
Ives' Tap Borers 33¢@55¢
Enterprise Mfg. Co. 20¢
Clark's 33¢@35¢

Borax—

Per lb. 0¢@10¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon—

Per b. 24¢

Boxes, Miter.

Spiker's Excelsior, 3 in. \$7.50, 4 in.
\$8.50, 5 in. \$13.00, 6 in. \$15.00 20¢

Braces—

American Bit Brace and Tool Co. 60&10
Nos. 10, 12, 20 70&10
Nos. 11, 21, 24, 27 70&10
Nos. 22, 23, 25 60&10
Nos. 13, 26, 36, 37 70&10&5
Amidon's 75&10@80¢
Barker's Imp'd Plain 75&10@80¢
Barker's Imp. Nickle 65&10@70¢
Ratchet 75&10@80¢
Eclipse Ratchet 40¢@40&10
Corner Brace, 8 in. 40¢@40&10
Universal, 8 in., \$2.10; 10 in. \$2.25
Buffalo Ball \$1.10@1.15
Barber's 50&10
Saxton's 75&10@80¢
Barker's Imp. Nickle 65&10@70¢
Ratchet, Polished 50&10@60¢
Ratchet, Nickle 40&10@50¢
Buffalo Ball net, \$1.10@1.15
Bartholomew's 50&10@60&5
Nos. 25, 27 and 30 50&10@60&5
Nos. 7, 13, 19 70&70&5
Common Ball, American \$1.00@1.10
Fray's Genuine Spofford's 50&5@50&10
Fray's Nos. 70 to 120, 81 to 123, 207 to 414 50&10
Ives' New Haven Novelty 70&70&5
New Haven Ratchet 60&5@60&10
Barber Ratchet 60&5@60&10
Barber's 80¢
Spofford 60&5@60&10
P. S. & V. Co., Peck's Patent 80¢
Rose & Johnson 50¢
Davis Patent 50&10

Brackets—

Shelf, plain 65¢@70¢
Sargent's list 60&10@70&10
Shelf, fancy 70¢@70&10
Other makes at a wide range of prices.
Bradley Shelf Brackets 70&10
Bright Wire Goods—See Wire.
Broilers—
Hen's Self, Inch 9 10 9x11
Basting, Per doz. \$4.50 5.50 6.50
New Haven 50¢
Wire Goods Co. list 65¢@10¢
Morgan Odorless doz. \$12.50
Queen City 38¢

Buckets, Well—

Galvanized—
Hill's doz. 12 qt. \$4.25; 14 qt. \$5.25
Iron Clad doz. 14 qt. \$4.25@4.50
Helwig's Flat Iron Band \$3.75
Helwig's Wired Top doz. \$4.00

Bull Rings—See Rings, Bull.

Butcher's Cleavers—See Cleavers, Butcher's.

Brass—

Wrought Brass 80¢@80&10
Cast Brass, Tiebout's 55¢

Cast Brass, Fast 33¢@10¢
Cast Brass, Loose Joint 33¢@10¢

Cast Iron—

Fast Joint, Narrow 60&10&5@60¢
Fast Joint, Broad 50&10@60¢
Loose Joint 75¢@75
Loose Joint, Japanned 10¢
Loose Joint, Jap. with Acorns 75¢@75
Parliament Butts 10¢
Mayer's Hinges 75¢@75
Loose Pin, Acorns 10¢
Loose Pin, Acorns, Japanned 10¢
Loose Pin, Acorns, Japanned, Plated tips 50¢@50&10

Wrought Steel—

Fast Joint, Narrow 40¢@10&10
Fast Joint, Broad 40¢@10&10
Loose Joint, Broad 40¢@10&10
Table Butts, Back Flaps, &c. 40¢@10&10
Inside Blind, Regular 40¢@10&10
Loose 40¢@10&10
Bronzed Wrought Butts 50¢@50&10

Callipers—See Compasses

Calks, Toe—

Gautier, One Prong, Blunt 5 1/2 @ 6¢
Burke's One Prong, Blunt 5 1/2 @ 6¢
Burke's, Two Prong, Blunt 7 1/2 @ 8¢
Burke's, One Prong, Sharp 6 1/2 @ 7¢

Can Openers—See Openers.

Cans, Milk—

S. S. & Co.: 5-gal., \$3.00; 8-gal., \$4.40;
10-gal., \$4.75 each 40&10

Cans, Oil—

Galvanized Blue Band, 5 gal., Tip-Top, doz. \$12.00
Galvanized Blue Band, 5 gal., Faucet, doz. \$12.00
Galvanized Blue Band, 1 gal., doz. \$2.25
Glass Oil, Friend doz. \$2.75

Caps—

Percussion—
Hicks & Goldmark's and Union Metallic
Cartridge Co. gr 1000

F. L. Waterproof, 1-10's 35¢@37¢
E. B. Trimmed Edge, 1-10's 47¢@50¢
E. B. Grnd. Edge, Cent. Fire, 1-10's 47¢@50¢

Musket, Waterproof, 1-10's 50¢@53¢
G. D. 27¢@30¢
S. B. Genuine Imported 45¢
Eley's E. B. 56¢@58¢
Eley's D Waterproof, Cent. Fire. \$1.60

Primers—

Berdan Primers, \$1.00 2¢
B. L. Caps (Sturtevant Shells) \$1.00 2¢
All other Primers, \$1.20 2¢

Cards—

Watson's Cotton, Wool, Horse and
File, list January 28, 1891 25¢

Carpet Stretchers—

See Stretchers, Carpet.

Cartridges—

Rim Fire Cartridges 50¢@52¢
Rim Fire Military 15¢@22¢
Cent. Fire, Pistol and Rifle 25¢@32¢
Cent. Fire, Military and Sporting 15¢@22¢

Blank Cartridges, except 22 and 32 cal.,
additional 10% to above discounts.
Blank Cartridges, 22 cal., \$1.75 2¢
Blank Cartridges, 32 cal., \$3.50 2¢
Panned Shells and Bullets 15¢@22¢
B. B. Caps, Round Ball, \$1.75 2¢
B. B. Caps, Con. Ball, Swgd., \$2.00 2¢

Carpet Sweepers—

See Sweepers, Carpet.

Casters—

Bed Brass 55¢@55&10
Plate Others 60¢@60&10
Shallow Socket 40¢@10¢
Deep Socket 40¢@10¢
Martin's Patent (Pencil) 45¢@50¢
Tucker's Patent, low list 45¢
Payson's Anti-friction 70¢@70&10
Payson's Truck 60¢@60&10
Yale Casters, low list 45¢
Yale, Gem 70¢
Giant Truck Casters 35¢
Stationary Truck Casters 50¢@10¢
Socket Truck Casters 50¢@50&10
Gwiner's Common Sense 45¢
Gwiner's Hercules 45¢

Cattle Leaders—

See Leaders, Cattle.

Cement—

Victor Elastic 5 lb pails \$ 5¢

Chain—

Trace, Wagon and Fancy Chains,
List revised May, 1893 60¢@60&10
American Coil, in cask lots,
3-18 1/2 5-18 1/2 6-18 1/2 7-18 1/2 8-18 1/2
\$7.60 5.30 4.45 3.80 3.65 3.00 3.40 3.25
Less than cask lots, add 10¢
German Coil, list July 12, 1892 6¢ @ 60&10¢
German Halter Chain, list July 12 1892 60¢@60&10

Covert Halter 60¢@60&10
Cover Traces 60¢@22¢
Cover Heel Chain 35¢@22¢
Galvanized Pump Chain 50¢@22¢

5 ton lots \$ 100 lb \$5.50
1-ton lots \$ 100 lb \$5.75
500-lb lots \$ 100 lb \$8.75
Less than 50

Chalk Lines—See Lines.

Checks, Door—
Unity.....50%

Chisels—

Socket Framing and Firmer
P. S. & W.....
New Haven.....
Wetherby.....75&10@75&10&10%
Wix.....
Ohio Tool Co.....
Douglass.....75@75&5%
Suck Bros.....30%
Merrill.....60&10@60&10&5%
L. & J. White.....30@30&5%

Tanged and Miscellaneous.

Tanged Firmers.....50@60&10%
Butchers'.....\$4.75@5.00
Spear & Jackson's.....\$5 to 2
Buck Bros.....30%
Cold Chisels, # 2.....15@10%

Chucks—

Beach Pat......each, \$8.00.....20%
Morse's Adjustable, each, \$7.00, 20@20&5%
Dunbury.....each, \$6.00, 30@30&5%
Eyracuse, B&L Pat......35%
Graham Patent.....33%
Skinner's Patent Chucks.....33%
Combination Lathe Chucks.....33%
Universal Lathe Chucks.....40%
Independent Lathe Chucks.....40%
Drill Chucks.....15%
Union Mfg. Co......\$3.50, 25%
Victor.....40%
Combination.....40%
Universal.....40%
Independent.....40%

Churns—

Tim Union, each, 5 gal. \$3.25; 7 gal., \$3.75; 10 gal., \$4.25.
McDermid Star Barrel Churn, each 6 gal., \$2.80; 10 gal., \$2.75; 15 gal., \$3.00; 20 gal., \$3.25.

Clamps—

E. I. Tool Co's Wrought Iron.....25%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammer.....15&10%
Adjustable, Stearn's.....30@30&10%
Stearn's Adjustable Cabinet and Corner.....30@30&10%
Cabinet, Sargent's.....70&10%
Carriage Makers', Sargent's.....75@75&5%
Carriage Makers', P. S. & W. Co......40&10%
Eberhard Mfg. Co......40&5@40&10%
Warner's.....40&10@40&10&5%
Saw Clamps, see Vises, Saw Filers'
Carpenter's, Cincinnati.....25&10%
Barnes' Machinists' Clamps.....33%&5%

Cleavers, Butchers'—

Bradley's.....25@30%
L. & J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co's.....40%
P. S. & W......33%&5@33%&10%
Foster Bros.....30%
Schultz, Lohoff & Co......40@40&5%

Clips—

Norway, Axle, 1/4 & 5-16.....55&5&5%
2d grade Norway Axle, 1/4 & 5-16.....65&5%
Superior Axle Clips.....60%&5@70%
Norway Spring Bar Clips, 5-16.....80&5&5%
Wrought Iron Felloe Clips.....# 2, 5%
Steel Felloe Clips.....# 2, 5%
Baker Axle Clips.....25%

Cloth and Netting, Wire—

—See Wire, &c.

Cockeyes—

.....50%

Cocks Brass—

Hardware list.....60&2%

Coffee Mills—See Mills, Coffee.**Collars, Dog—**

Chapman Mfg. Company, new list.....40%
Medford Family Goods Co......40&10&50%
Embossed, Gilt, Pope & Steven's list.....30&10%
Leather, Pope & Steven's list.....40%
Erass, Pope & Steven's list.....40%

Combs, Curry—

Fitch's.....50&10@50&10&10%
Butter, per doz......\$10.00.....25%
American Curry Comb Co......33%&40%
Kohler's Magic Oscillating.....# doz., \$2.00
Kohler's Humane.....# doz., \$1.75

Compasses, Dividers, &c.

Compasses, Callipers, Dividers.....70@70&10%
Bemis & Call Co's.....65%
Dividers.....50&5%
Callipers, Inside or Outside.....65%
Callipers, Wing.....60%
Callipers, Double.....65%
Callipers, Call's Patent Inside.....65%
Excelsior.....60%
Stevens & Co's.....25&10%
Starrett's.....25&10%
Spring Callipers and Dividers.....25&10%
Lock Callipers and Dividers.....25%
Combination Dividers.....25%

Coolers, Water—

B. B. & Co......2-gal., \$2.00; 3-gal., \$2.50;
4-gal., \$2.75; 6-gal., \$3.40 each.....33%&5%

Coopers' Tools—

—See Tools, Coopers'.

Cord—

Sash—
Common.....# 2, 8%@9%
Patent, good quality.....# 2, 10@11%
White Cotton Braided, fair.....# 2, 23@24%
Common Russia Sash.....# 2, 12@13%
Patent Russia Sash.....# 2, 13@14%
Cable Laid Italian Sash.....# 2, 19@20%
India Cable Laid Sash.....# 2, 11@12%
Silver Lake.....
A quality, White, 50#.....25%
B quality, White, 50#.....25%
B quality, White, 30#.....10%
B quality, Drab, 35#.....10%
Sylvan Spring, Extra Braided, White, 34#.....34%
Sylvan Spring, Extra Braided, Drab, 39#.....39%
Semper Idem, Braided, White.....27@28%
Egyptian, India Hemp, Braided.....28%
Massachusetts, White.....28%
Sanson—
Braided, White Cotton.....# 2, 37%
Braided, Drab Cotton.....# 2, 42%
Braided, Italian Hemp.....# 2, 40%
Braided, Linen.....# 2, 66%
ate's Solid Braided.....
Hercules, White.....# 2, 25%
Hercules, Drab.....# 2, 30%
Economy Drab.....# 2, 27%
Economy White.....# 2, 22%
Sawman Mills—
Braided, Giant, White # 2, 30%.....20%
Braided, Giant, Drab and Fancy, # 2, 35%.....10%

Braided, Crown White, # 2, 50#.....50%
Braided, Crown Drab and Fancy, # 2, 50#.....50%

Wire Picture—

Braided or Twisted.....80&5@80&15%

Corkscrews—See Screws, Cork.**Corn Knives and Cutters—**

—See Knives, Corn.

Crackers Nut—

Table (H. & B. Mfg. Co.).....40%
Blake's Pattern, # doz......\$2.00.....10%
Turner & Seymour Mfg. Co......50%
Acme.....
Japanned, # gro......\$30.....50%
Nickel Plated, # gro......\$30.....10%

Cradles—

Grain.....50&2@50&5&2%

Crayons—

White Crayons, # gross.....7@8%
D. M. Stewart Mfg. Co......
Retal Workers', # gross.....\$1.75.....25%
Rolling Mill, # gross.....2.50.....25%
Railroad, # gross.....2.00.....25%
Soapstone Pencils, # gross.....1.00.....25%
See also Chalk.

Creamery Pails—See Pails, Creamery.**Crow Bars—See Bars, Crow.****Curry Combs—**

—See Combs, Curry.

Curtain Pins—

—See Pins, Curtain.

Cutters—**Meat—**

Dixon's, # doz......40@40&5%
Nos......
1.....\$14.00 \$17.00 \$19.00 \$30.00
2.....100 150
3.....\$15.00 \$18.00
Hale's, # doz......12 13 70%
Nos......
1.....\$27.00 \$33.00 \$45.00
2.....30%
American.....
1.....\$5 2 \$7 3 \$10 25 \$50 \$80
Each.....
Enterprise.....10 12 22 32 42
Each.....\$3 \$3.50 \$4 \$6 \$15
Little Giant, # doz......40&10@50%
Nos......310 312 320 322
\$35.00 \$48.00 \$44.00 \$72.00 \$68.00
Triumph No. 505, # doz......\$21.00, 25@30%
Miles' Challenge, # doz......45@45&10%
Nos......1 2 3
\$22.00 \$30.00 \$40.00
Home No. 1, # doz......\$25.00, 55&10%
Draw Cut, each:
Nos. 5 2 6 8
\$50 \$75 \$80 \$225.....20@25%
Beef Shavers (Enterprise).....20%
Chadborn's Smoked Beef Cutter, # doz......\$66.00

Saw and Kraut—

Tucker & Dorsey Mfg. Co......
Saw Cutters, 1 Knife, # gross.....\$21.00
Saw Cutters, 2 Knife, # gross.....30.00
Kraut Cutters.....40%

Tobacco—

Champion.....20&10@30%
All Iron.....# doz., \$4.25
Nathan Lock Co's, # doz......\$18.00, 50@55%
Wilson's.....
Sargent's.....# doz., \$24.00, 55&10%
Acme.....# doz., \$20.00, 40%

Washer—

Smith's Pat......# doz., \$12.00, 20&10&10%
Johnson's.....# doz., \$11.00, 33%&5%
Penny's.....# doz., Pol. \$14; Jap'd, \$15, 55%
Appleton's.....# doz., \$18.00, 60&10%
Bonney's.....# doz., 80&10%
Cincinnati.....25&10%

Diggers, Post Hole, &c.—

Samson, # doz......\$34.00.....25&25&10%
Fletcher Post Hole Augers, # doz......\$36.00, 20&10%
Eureka Diggers.....# doz., \$12.00@13.00
Vaughan's Post Hole Auger, # doz......\$8.50@9.50
Kohler's Little Giant.....# doz., \$18.00
Kohler's Hercules.....# doz., \$14.00
Kohler's Invincible.....# doz., \$12.00
Kohler's New Champion.....# doz., \$8.00
Scheider.....# doz., \$18.00
Cronk's Post Bars, # doz......\$60.00, 60&5@50&10%
Gibb's Post Hole Digger.....# doz., \$15.00
Gibb's National.....# doz., \$12.00
Gibb's Columbia.....# doz., \$13.00
Gibb's Imperial.....# doz., \$7.50
Shimer's Hollow Hammer.....# doz., \$24.00, 50%
Gem, Improved # doz......\$9.00@10.00 net

Dividers—See Compasses.**Dog Collars—See Collars, Dog.****Door Checks—**

—See Checks, Door.

Door Springs—

—See Springs, Door.

Drawers.

Money, # doz......\$18@20
Waddell's Improved, # doz......\$15.00

Drawing Knives—

—See Knives, Drawing.

Drills and Drill Stocks—

Blacksmiths', # feeding, each.....\$1.75
Blacksmiths' Sash Feeding, each.....\$7.50, 20%
Erast, P. S. & W......40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each \$3.00, 25%
Breast, Bartholomew's.....each \$2.50, 25&10@40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll's.....20@20&5%
Ratchet, Parker's.....20@20&5%
Ratchet, Whitney's.....20@20&5%
Ratchet, Weston's.....20@20&5%
Ratchet, Moore's Triple Action.....25@30%
Ratchet, Curtis & Curtis.....30%
Whitney's Hand Drill, Plain.....\$11.00
Adjustable.....\$12.00.....10%
Automatic Boring Tools.....\$1.75@1.85
Chicago Automatic Drill.....20&10%
Goodell Automatic Drills.....40&5%

Twist Drills—

Cleveland.....50&10&10%
Diamond, W. & B......50&10&10%
Graham's Pat. Groove Shank.....50&10&10%
Morse.....50&10&10%
New Process.....50&10&10%
Standard.....50&10&10%
Syracuse (Metal list).....50&10%

Drill Bits or Bit Stock

Drills—See Augers and Bits.

Drill Chucks—See Chucks.**Dripping Pans—**

—See Pans, Dripping.

Drivers, Screw—

Douglas Mfg. Co......20@20&10%
Disston's.....50%
Buck Bros.....30%
Stanley R. & L. Co's.....
No. 64, Varished Handles.....65&10%
No. 86.....70&10%
Sargent & Co's.....
No. 1, Forged Blade.....60&10&10%
Nos. 20, 40 and 60.....60%&10&10%
P. S. & W......70%
Knap & Cowles.....
No. 1.....60&20@70%
No. 2.....60&10&10@70&5%
No. 3.....60&5@60&10%
Nos. 4 and 00, Acme and Ideal.....50&5%
50&10&5%
25&10&5%

Stearns'—

Gay & Parsons.....25&10%
Champion.....35%
Clark's Pat......30@33%
Ellrich's Socket and Ratchet.....35@25&10%
Allard's Spiral, new list.....25%
Kolb's Common Sense.....# doz., \$8.00, 25&10%
Syracuse Screw Driver Bits.....30&5&5%
Screw Driver Bits, Parr's.....# gross, \$6.25
Fray's Hol. H. die Sets.....No. 3, \$12.00, 45%
Cincinnati.....25&10%
Brace Screw Drivers.....25&10%
Buck Bros', Screw Driver Bits.....27%&5%
Goodell's Atomizer.....30%
Mayhew's Black Handle.....50%
Mayhew's Monarch.....45&10%
C. T. Williamson Wire Novelty Co......50%

Egg Beaters—See Beaters, Egg**Egg Poachers—**

—See Poachers, Egg.

Electric Bell Sets—

—See Bells, Electric.

Emery—No. 4 to No. 54 to Flour, CF.

46 gr. 150 gr. F.F.F.
Kegs, # 2.....44% 5 2 2%
1/2 kegs, # 2.....44% 5 2 2%
10 lb. cans, 10.....5% 5 3
In case.....6 6 5
10-b cans, less than 10.....10 10 7%
Enameled and Tinned Ware—See Ware, Hollow

Escutcheon Pins—

—See Pins, Escutcheon.

Escutcheons—

Door Locks.....Same dis. as Door Locks.
Brass Thread.....60@60&10%
Wood.....25%

Expanded Metal—

—List No. 5.

Dathing.....10%
Fachin's Painted Sheets.....20%
Netting, Painted Sheets.....20%
Door Mats, Galvanized.....25%
Window Guards, Paneled.....15%
Tree Guards, Paneled.....15%

Extractors, Lemon Juice—

—See Squeezers, Lemon.

Fasteners, Blind—

MacKrell's, # doz......\$1.00.....20@20&10%
Van Sand's Screw Pat. \$15 # gr......60&10%
Van Sand's Old Pat. \$15 # gr......55&10%
Austin & Elder No. 2008.....# gr., \$2.00
Security Gravity.....# gr., \$3.00
Zimmerman's.....50&10%

Faucets—

Fenn's.....40%
Fenn's Cork Stops.....33%&5%
Star.....60%
Frary's Pat. Petroleum.....60%
B. & L. B. Co......
West's Lock, Open and Shut Key.....50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list.....60%
Metallic Key, Leather Lined.....60&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl. lots.....50&10%
John Sommers.....
Peerless Best Block Tin Key.....40%
1X, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection Fla. Red Cedar (in boxes).....40%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
O. C. Western Pattern Cork Lined.....60%
No Brand, Red Cedar (in bbls.).....50&10%
Western Pattern Metal Key.....40%
No Brand Metal Key.....60%
Self Measuring.....
Enterprise, # doz......\$36.00.....20%
Lane's # doz......\$36.00.....25&10%

Felloe Plates—

—See Plates, Felloe.

Fibre Ware—See Ware, Fibre.**Fifth Wheels—**

Derby and Cincinnati.....45&5%
Brewster.....50&5%

Files—

Domestic—
Nicholson Files, Rasps, &c......60&10&5%
Nicholson (X.F.) Files.....60&10&10%
Nicholson's Royal Files (Seconda).....75%
(extra prices on certain sizes.)
American.....66%&10@66%&10&5%
G. & H. Barnett (Black Diamond).....60&10@60&10&5%
Arcade.....60&10&10@70%
Bagle.....60&10&10@70%
Other makers, best brands.....60&10&5@70%
Fair brands.....70&10@70&10&10%
Second quality.....80&80&5%
Heller's Horse Rasps.....50&7%&50&10%
McCaffrey's Horse Rasps.....50&10%
Chelsea Horse Rasps, Hand Cut.....50&10%
Arcade Horse Rasps.....60&10&5@10&5%
Trojan Horse Rasps.....60&10&5%

Imported—

Butcher.....Butcher's list 25@30%
Stubs.....

Fixtures Grindstone—

Sargent's Patent.....70&10%
Reading Hardware Co......30&10%
P. S. & W. Co......50&10%
Moore's.....50%

Fluting Machines—

—See Machines, Fluting.

Fluting Scissors—

—See Scissors, Fluting.

Fodder Squeezers—

—See Squeezers, Fodder.

Forks—

Hay, Manure, &c. Asso. List.....70@70&5&5%
Hay, Manure, &c. Phila. List.....90@90&10&5%
Plated, see Spoons.

Frames—Saw—

White Vermont.....# gro., \$9.00@10.00
Red, Polished and Varished.....# doz., \$1.50, 55%

Screen, Window and Door—

Porter's Pat. Window and Door Frame.....38%&10%
Warner's Screen Corner Irons.....33%
Stearns' Frames and Corners.....25@25&10%
Cortland.....40@40&5%
Phillips' Window Screen Frames.....50@50&5%

Freezers Ice Cream—

White Mountain.....60@60&5%
Granite State.....65@65&5%
Arctic.....70@70&5%
American.....65

Halters—

Cover's, Rope, Jute.....	60¢10¢10¢25¢
Cover's Rope, 7-18 in. Jute.....	70¢25¢
Cover's Rope, 1/4 in. Hemp.....	50¢25¢
Cover's Ad. Rope Halters.....	40¢25¢
Cover's Hemp Horse and Cattle Tie.....	50¢25¢
Cover's Jute Horse Tie.....	70¢25¢
Cover's Jute Cattle Tie.....	70¢10¢25¢
Cover's Ad. Web Halters.....	35¢5¢25¢
Cover's Saddlery Works Halters.....	33¢25¢
Cover's Saddlery Works Horse and Cattle Tie.....	33¢25¢
Cover's Saddlery Works Handy Web Halters.....	33¢25¢

Hammers—

Handled Hammers—	
Maydole's, list Dec. 1, '85.....	25¢10¢35¢
Buffalo Hammer Co.....	50¢10¢
Humason & Beckley.....	50¢10¢
Asha Tool Co.....	50¢10¢
Verres—	
C. Hammond & Son.....	40¢10¢—
Fayette R. Plumb.....	40¢10¢
Artisans Choice, A. E. Nail.....	40¢10¢
Regular Y. & P. A. E. Nail.....	60¢
Korshoeke Turning Hammers.....	50¢
Other Hammers.....	50¢10¢
Cheney's Claw.....	50¢10¢
Cheney's Machinist's & Riveting.....	50¢25¢
Magnetic Tack, Nos. 1, 2, 3, 1.25, 1.50 & 1.75.....	30¢10¢
Nelson Tool Works.....	40¢10¢
Warner & Nobles, new list.....	25¢10¢
Peck, Stow & Wilcox.....	40¢10¢
Sargent's.....	40¢10¢

Heavy Hammers and Sledge—

5 lb and under.....	75¢10¢75¢10¢
5 to 10 lb.....	85¢
Over 10 lb.....	85¢
Wilkinson's Smiths.....	10¢10¢11¢25¢

Handcuffs and Leg Irons—

See Police Goods.

Handles—

Sensible.....						40%
Iron, Wrought or Cast—						
Door or Thumb.						
Nos.....	0	1	2	3	4	
Per doz.....	\$0.90	1.00	1.08	1.85	1.50	
						80&10&10%
Roggin's Latches.....						7 doz 30¢35¢
Bronze Iron Drop Latches.....						7 doz 1.62
Jap'd Store Door Handles—Nuts, 1.62,						1.75, 1.80, 1.90, 2.00, 2.10, 2.20, 2.30, 2.40, 2.50, 2.60, 2.70, 2.80, 2.90, 3.00, 3.10, 3.20, 3.30, 3.40, 3.50, 3.60, 3.70, 3.80, 3.90, 4.00, 4.10, 4.20, 4.30, 4.40, 4.50, 4.60, 4.70, 4.80, 4.90, 5.00, 5.10, 5.20, 5.30, 5.40, 5.50, 5.60, 5.70, 5.80, 5.90, 6.00, 6.10, 6.20, 6.30, 6.40, 6.50, 6.60, 6.70, 6.80, 6.90, 7.00, 7.10, 7.20, 7.30, 7.40, 7.50, 7.60, 7.70, 7.80, 7.90, 8.00, 8.10, 8.20, 8.30, 8.40, 8.50, 8.60, 8.70, 8.80, 8.90, 9.00, 9.10, 9.20, 9.30, 9.40, 9.50, 9.60, 9.70, 9.80, 9.90, 10.00, 10.10, 10.20, 10.30, 10.40, 10.50, 10.60, 10.70, 10.80, 10.90, 11.00, 11.10, 11.20, 11.30, 11.40, 11.50, 11.60, 11.70, 11.80, 11.90, 12.00, 12.10, 12.20, 12.30, 12.40, 12.50, 12.60, 12.70, 12.80, 12.90, 13.00, 13.10, 13.20, 13.30, 13.40, 13.50, 13.60, 13.70, 13.80, 13.90, 14.00, 14.10, 14.20, 14.30, 14.40, 14.50, 14.60, 14.70, 14.80, 14.90, 15.00, 15.10, 15.20, 15.30, 15.40, 15.50, 15.60, 15.70, 15.80, 15.90, 16.00, 16.10, 16.20, 16.30, 16.40, 16.50, 16.60, 16.70, 16.80, 16.90, 17.00, 17.10, 17.20, 17.30, 17.40, 17.50, 17.60, 17.70, 17.80, 17.90, 18.00, 18.10, 18.20, 18.30, 18.40, 18.50, 18.60, 18.70, 18.80, 18.90, 19.00, 19.10, 19.20, 19.30, 19.40, 19.50, 19.60, 19.70, 19.80, 19.90, 20.00, 20.10, 20.20, 20.30, 20.40, 20.50, 20.60, 20.70, 20.80, 20.90, 21.00, 21.10, 21.20, 21.30, 21.40, 21.50, 21.60, 21.70, 21.80, 21.90, 22.00, 22.10, 22.20, 22.30, 22.40, 22.50, 22.60, 22.70, 22.80, 22.90, 23.00, 23.10, 23.20, 23.30, 23.40, 23.50, 23.60, 23.70, 23.80, 23.90, 24.00, 24.10, 24.20, 24.30, 24.40, 24.50, 24.60, 24.70, 24.80, 24.90, 25.00, 25.10, 25.20, 25.30, 25.40, 25.50, 25.60, 25.70, 25.80, 25.90, 26.00, 26.10, 26.20, 26.30, 26.40, 26.50, 26.60, 26.70, 26.80, 26.90, 27.00, 27.10, 27.20, 27.30, 27.40, 27.50, 27.60, 27.70, 27.80, 27.90, 28.00, 28.10, 28.20, 28.30, 28.40, 28.50, 28.60, 28.70, 28.80, 28.90, 29.00, 29.10, 29.20, 29.30, 29.40, 29.50, 29.60, 29.70, 29.80, 29.90, 30.00, 30.10, 30.20, 30.30, 30.40, 30.50, 30.60, 30.70, 30.80, 30.90, 31.00, 31.10, 31.20, 31.30, 31.40, 31.50, 31.60, 31.70, 31.80, 31.90, 32.00, 32.10, 32.20, 32.30, 32.40, 32.50, 32.60, 32.70, 32.80, 32.90, 33.00, 33.10, 33.20, 33.30, 33.40, 33.50, 33.60, 33.70, 33.80, 33.90, 34.00, 34.10, 34.20, 34.30, 34.40, 34.50, 34.60, 34.70, 34.80, 34.90, 35.00, 35.10, 35.20, 35.30, 35.40, 35.50, 35.60, 35.70, 35.80, 35.90, 36.00, 36.10, 36.20, 36.30, 36.40, 36.50, 36.60, 36.70, 36.80, 36.90, 37.00, 37.10, 37.20, 37.30, 37.40, 37.50, 37.60, 37.70, 37.80, 37.90, 38.00, 38.10, 38.20, 38.30, 38.40, 38.50, 38.60, 38.70, 38.80, 38.90, 39.00, 39.10, 39.20, 39.30, 39.40, 39.50, 39.60, 39.70, 39.80, 39.90, 40.00, 40.10, 40.20, 40.30, 40.40, 40.50, 40.60, 40.70, 40.80, 40.90, 41.00, 41.10, 41.20, 41.30, 41.40, 41.50, 41.60, 41.70, 41.80, 41.90, 42.00, 42.10, 42.20, 42.30, 42.40, 42.50, 42.60, 42.70, 42.80, 42.90, 43.00, 43.10, 43.20, 43.30, 43.40, 43.50, 43.60, 43.70, 43.80, 43.90, 44.00, 44.10, 44.20, 44.30, 44.40, 44.50, 44.60, 44.70, 44.80, 44.90, 45.00, 45.10, 45.20, 45.30, 45.40, 45.50, 45.60, 45.70, 45.80, 45.90, 46.00, 46.10, 46.20, 46.30, 46.40, 46.50, 46.60, 46.70, 46.80, 46.90, 47.00, 47.10, 47.20, 47.30, 47.40, 47.50, 47.60, 47.70, 47.80, 47.90, 48.00, 48.10, 48.20, 48.30, 48.40, 48.50, 48.60, 48.70, 48.80, 48.90, 49.00, 49.10, 49.20, 49.30, 49.40, 49.50, 49.60, 49.70, 49.80, 49.90, 50.00, 50.10, 50.20, 50.30, 50.40, 50.50, 50.60, 50.70, 50.80, 50.90, 51.00, 51.10, 51.20, 51.30, 51.40, 51.50, 51.60, 51.70, 51.80, 51.90, 52.00, 52.10, 52.20, 52.30, 52.40, 52.50, 52.60, 52.70, 52.80, 52.90, 53.00, 53.10, 53.20, 53.30, 53.40, 53.50, 53.60, 53.70, 53.80, 53.90, 54.00, 54.10, 54.20, 54.30, 54.40, 54.50, 54.60, 54.70, 54.80, 54.90, 55.00, 55.10, 55.20, 55.30, 55.40, 55.50, 55.60, 55.70, 55.80, 55.90, 56.00, 56.10, 56.20, 56.30, 56.40, 56.50, 56.60, 56.70, 56.80, 56.90, 57.00, 57.10, 57.20, 57.30, 57.40, 57.50, 57.60, 57.70, 57.80, 57.90, 58.00, 58.10, 58.20, 58.30, 58.40, 58.50, 58.60, 58.70, 58.80, 58.90, 59.00, 59.10, 59.20, 59.30, 59.40, 59.50, 59.60, 59.70, 59.80, 59.90, 60.00, 60.10, 60.20, 60.30, 60.40, 60.50, 60.60, 60.70, 60.80, 60.90, 61.00, 61.10, 61.20, 61.30, 61.40, 61.50, 61.60, 61.70, 61.80, 61.90, 62.00, 62.10, 62.20, 62.30, 62.40, 62.50, 62.60, 62.70, 62.80, 62.90, 63.00, 63.10, 63.20, 63.30, 63.40, 63.50, 63.60, 63.70, 63.80, 63.90, 64.00, 64.10, 64.20, 64.30, 64.40, 64.50, 64.60, 64.70, 64.80, 64.90, 65.00, 65.10, 65.20, 65.30, 65.40, 65.50, 65.60, 65.70, 65.80, 65.90, 66.00, 66.10, 66.20, 66.30, 66.40, 66.50, 66.60, 66.70, 66.80, 66.90, 67.00, 67.10, 67.20, 67.30, 67.40, 67.50, 67.60, 67.70, 67.80, 67.90, 68.00, 68.10, 68.20, 68.30, 68.40, 68.50, 68.60, 68.70, 68.80, 68.90, 69.00, 69.10, 69.20, 69.30, 69.40, 69.50, 69.60, 69.70, 69.80, 69.90, 70.00, 70.10, 70.20, 70.30, 70.40, 70.50, 70.60, 70.70, 70.80, 70.90, 71.00, 71.10, 71.20, 71.30, 71.40, 71.50, 71.60, 71.70, 71.80, 71.90, 72.00, 72.10, 72.20, 72.30, 72.40, 72.50, 72.60, 72.70, 72.80, 72.90, 73.00, 73.10, 73.20, 73.30, 73.40, 73.50, 73.60, 73.70, 73.80, 73.90, 74.00, 74.10, 74.20, 74.30, 74.40, 74.50, 74.60, 74.70, 74.80, 74.90, 75.00, 75.10, 75.20, 75.30, 75.40, 75.50, 75.60, 75.70, 75.80, 75.90, 76.00, 76.10, 76.20, 76.30, 76.40, 76.50, 76.60, 76.70, 76.80, 76.90, 77.00, 77.10, 77.20, 77.30, 77.40, 77.50, 77.60, 77.70, 77.80, 77.90, 78.00, 78.10, 78.20, 78.30, 78.40, 78.50, 78.60, 78.70, 78.80, 78.90, 79.00, 79.10, 79.20, 79.30, 79.40, 79.50, 79.60, 79.70, 79.80, 79.90, 80.00, 80.10, 80.20, 80.30, 80.40, 80.50, 80.60, 80.70, 80.80, 80.90, 81.00, 81.10, 81.20, 81.30, 81.40, 81.50, 81.60, 81.70, 81.80, 81.90, 82.00, 82.10, 82.20, 82.30, 82.40, 82.50, 82.60, 82.70, 82.80, 82.90, 83.00, 83.10, 83.20, 83.30, 83.40, 83.50, 83.60, 83.70, 83.80, 83.90, 84.00, 84.10, 84.20, 84.30, 84.40, 84.50, 84.60, 84.70, 84.80, 84.90, 85.00, 85.10, 85.20, 85.30, 85.40, 85.50, 85.60, 85.70, 85.80, 85.90, 86.00, 86.10, 86.20, 86.30, 86.40, 86.50, 86.60, 86.70, 86.80, 86.90, 87.00, 87.10, 87.20, 87.30, 87.40, 87.50, 87.60, 87.70, 87.80, 87.90, 88.00, 88.10, 88.20, 88.30, 88.40, 88.50, 88.60, 88.70, 88.80, 88.90, 89.00, 89.10, 89.20, 89.30, 89.40, 89.50, 89.60, 89.70, 89.80, 89.90, 90.00, 90.10, 90.20, 90.30, 90.40, 90.50, 90.60, 90.70, 90.80, 90.90, 91.00, 91.10, 91.20, 91.30, 91.40, 91.50, 91.60, 91.70, 91.80, 91.90, 92.00, 92.10, 92.20, 92.30, 92.40, 92.50, 92.60, 92.70, 92.80, 92.90, 93.00, 93.10, 93.20, 93.30, 93.40, 93.50, 93.60, 93.70, 93.80, 93.90, 94.00, 94.10, 94.20, 94.30, 94.40, 94.50, 94.60, 94.70, 94.80, 94.90, 95.00, 95.10, 95.20, 95.30, 95.40, 95.50, 95.60, 95.70, 95.80, 95.90, 96.00, 96.10, 96.20, 96.30, 96.40, 96.50, 96.60, 96.70, 96.80, 96.90, 97.00, 97.10, 97.20, 97.30, 97.40, 97.50, 97.60, 97.70, 97.80, 97.90, 98.00, 98.10, 98.20, 98.30, 98.40, 98.50, 98.60, 98.70, 98.80, 98.90, 99.00, 99.10, 99.20, 99.30, 99.40, 99.50, 99.60, 99.70, 99.80, 99.90, 100.00, 100.10, 100.20, 100.30, 100.40, 100.50, 100.60, 100.70, 100.80, 100.90, 101.00, 101.10, 101.20, 101.30, 101.40, 101.50, 101.60, 101.70, 101.80, 101.90, 102.00, 102.10, 102.20, 102.30, 102.40, 102.50, 102.60, 102.70, 102.80, 102.90, 103.00, 103.10, 103.20, 103.30, 103.40, 103.50, 103.60, 103.70, 103.80, 103.90, 104.00, 104.10, 104.20, 104.30, 104.40, 104.50, 104.60, 104.70, 104.80, 104.90, 105.00, 105.10, 105.20, 105.30, 105.40, 105.50, 105.60, 105.70, 105.80, 105.90, 106.00, 106.10, 106.20, 106.30, 106.40, 106.50, 106.60, 106.70, 106.80, 106.90, 107.00, 107.10, 107.20, 107.30, 107.40, 107.50, 107.60, 107.70, 107.80, 107.90, 108.00, 108.10, 108.20, 108.30, 108.40, 108.50, 108.60, 108.70, 108.80, 108.90, 109.00, 109.10, 109.20, 109.30, 109.40, 109.50, 109.60, 109.70, 109.80, 109.90, 110.00, 110.10, 110.20, 110.30, 110.40, 110.50, 110.60, 110.70, 110.80, 110.90, 111.00, 111.10, 111.20, 111.30, 111.40, 111.50, 111.60, 111.70, 111.80, 111.90, 112.00, 112.10, 112.20, 112.30, 112.40, 112.50, 112.60, 112.70, 112.80, 112.90, 113.00, 113.10, 113.20, 113.30, 113.40, 113.50, 113.60, 113.70, 113.80, 113.90, 114.00, 114.10, 114.20, 114.30, 114.40, 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164.50, 164.60, 1

Pullers, Nail-

Gerantons, # doz., \$18.00, 38¢
 Giant, No. 1, # doz., \$18.00, 10¢
 Giant, No. 2, # doz., \$15.00, 10¢
 Pelican, # doz., \$9.00, 25¢
 Eclipse, # doz., \$24.00, 40¢
 Economy, # doz., \$4.00

Pulleys-

Hot House, Awning, &c., 60¢/70¢
 Japanned Screw, 80¢/10¢
 Brass Screw, 70¢
 Japanned Side, 80¢/10¢
 Moore's Side, Anti-Friction, 50¢
 Moore's Side, End, Anti-Friction, 40¢
 Moore's Dumb Water, Anti-Friction, 50¢
 Moore's Electric Light, 33¢/4¢
 Japanned Clothes Line, 60¢/10¢
 Hay Fork, Solid Eye, \$4.00; Swivel, \$4.50, 50¢/10¢/50¢/10¢/5¢
 Hay Fork, "Anti-Friction," 5 in. solid, \$6.70, 50¢
 Hay Fork, "F" Common and Patent Bushed, 20¢
 Hay Fork, Tarbox Pat. Iron, 20¢
 Hay Fork, Reed's Self-Lubricating, 60¢
 Hay Fork, Moore's Anti-Friction 5 in. Wheel, # doz., \$12.00, 40¢
 Shade Rack, 45¢
 Tackle Blocks-See Blocks
 Shepard's Niagara, No. 25, # doz 23¢ net (Auger Mortise), 60¢
 Common Sense, 60¢
 Empire, 60¢
 Ideal, Nos. 2, 4, 10 & 15, # doz less 1¢ # Acme, 40¢ net
 Star, 40¢
 On bbl. lots extra 5¢
 Ideal, Nos. 25 and 55, # doz, 22¢ net.

Pumps-

Clifton, Best Makers, 60¢/80¢/10¢
 Pitcher Spout, Best Makers, 67¢/70¢
 Pitcher Spout, Cheaper G'ds., 75¢/75¢/10¢

Punches-

Saddler's or Drive, good, # doz., 60¢/55¢
 Bemis & Call Co.'s Cast Steel Drive, 50¢/55¢
 Bemis & Call Co.'s Springfield Socket, 45¢
 Spring, good quality, # doz., \$2.50/\$2.60
 Spring, Leach's Pat., 15¢
 Bemis & Call Co.'s Spring, 50¢/55¢
 Bemis & Call Co.'s Check, 55¢
 Solid Timmers', P., S. & W. Co., # doz., \$1.44, 55¢
 Timmers' Hollow Punches, P., S. & W. Co., 20¢/22¢
 Kloe Hand Punches, 15¢
 Avery's Revolving, 40¢
 Avery's Saw-toothed Punch, See Sawtooth
 Niagara Hollow Punches, 20¢/22¢
 Niagara Solid Punches, 55¢

Rail-

Sliding Door, Wrt. Brass, # doz, 35¢, 40¢
 Sliding Door, Bronze Wrt. Iron, # ft., 7¢
 Sliding Door, Iron, Painted, # ft., 4¢, 40¢
 Barn Door, Light, In., # ft., 3¢, 30¢
 Per 100 feet, \$2.00 2.50 3.10, 10¢
 B. D. for N. E. Hangers
 Small, Med. Large.
 Per 100 feet, \$3.15 2.70 3.25 Net
 Terry's Steel Rail, # ft., 7¢
 Victor Track Rail, 7¢ # foot, 50¢/22¢
 Carrier, double braced, Steel Rail, # foot, 3¢/4¢
 Lundy Parlor Door, Planed Edge, # ft, 7¢
 Moore's Steel Rail, 25¢/10¢
 Moody Steel Rail # ft., 5¢, 45¢

Rakes-

Cast Steel, Association G'ds., 70¢/70¢/5¢/2¢
 Cast Steel, outside G'ds., 70¢/70¢/5¢/2¢
 Malleable, 70¢/70¢/5¢
 Gibbs' Lawn Rake, # doz., \$4.90
 Gibbs' Canton Lawn Rake, # doz., \$3.75
 Gibbs' Acme Lawn Rake, # doz., \$4.75
 Gibbs' Favorite Lawn Rake, # doz., \$5.30
 Gibbs' Crown Lawn Rake, No. 1, # doz., \$4.90; No. 2, \$5.40
 Oneida Lawn Rake, # doz., \$6.00
 Fort Madison Prize Bow Brace and Feederless, 65¢
 Fort Madison Steel Tooth Lawn Rake, # doz., 25¢

Razors-

J. R. Torrey Razor Co., 20¢
 Wostenholm and Butcher, \$10 to 2, 10¢
 Jordan's AAAI, new list, Net
 Jordan's Old Faithful, new list, Net
 Galvanic, # doz., \$16.00
 Electric Cutlery Co., Net
 Campbell Cutlery Co., 50¢

Razor Straps-

See Straps, Razor.

Registers-

Moore's Japanned, 75¢
 Moore's Electroplated, 75¢
 Moore's Bronze Finishes, 70¢
 Moore's Solid Bronze, 65¢
 Moore's Stove Pipe, 33¢

Rings and Ringers-**Bull Rings-**

Union Nut Co., 55¢
 Sargent's, 75¢/10¢
 Hotchkiss' low list, 30¢
 Humason, Beckley & Co., 70¢/10¢
 Peck, Stow & W. Co.'s, 50¢/10¢/50¢/10¢/10¢
 Hilrich Hd. Co., White Metal, # doz list, 50¢/50¢/10¢

Hog-

Top of the Hill Rings, # doz \$2.00
 Top of the Hill Rings, # doz \$1.25
 Hill's Improved Rings, # doz \$1.25
 Hill's Old Style Rings, # doz \$1.12½
 Hill's Tongs, # doz \$3.00
 Hill's Rings, # doz bxs \$1.00
 Perfect Rings, # doz bxs \$1.50
 Perfect Rings, # doz \$2.15
 Blair's Hog Rings, # doz \$2.00
 Blair's Hog Rings, # doz 90¢/\$1.00
 Champion Rings, # doz \$2.00
 Champion Rings, Double, # doz \$2.25
 Brown's Rings, # doz \$2.00
 Brown's Rings, # doz \$1.25
 Electric Hog Rings, # doz boxes \$1.50
 Electric Hog Rings, # doz \$2.00
 Major Rings, # doz \$1.25
 Major Rings, # doz \$2.00

Rivets and Burrs-

Norway Iron, list Nov. 17, '87, 60¢/10¢
 Second quality, 70¢
 Copper, 60¢/80¢/10¢
 Coppered Iron, Bettina Brand, 50¢/25¢

Rivet Sets-See Sets.**Roasting and Baking****Pans-See Pans, Roasting and Baking.****Rods-**

Star, Brass, 25¢/30¢
 Star, Black Walnut, # doz 40¢

Rollers-

Barn Door, Sargent's list, 60¢/10¢/10¢
 Moore's Anti-Friction, 50¢
 Union Barn Door Roller, 50¢
 Moore's Barn Door Stay, 50¢
 Thompson Mfg. Co.'s Lawn Rollers, 30¢

Rope-The following prices are f.o.b.

New York or factory, and are shaded ¼¢/½¢ on large lots; terms, 1½¢ for cash.
 Manila, 7-16 in. diam. and larger, # 8½¢
 Manila, 3/4 in. and 5-16 in., # 9¢
 Manila, Tarred Rope, # 8¢
 Manila, Hay Rope, # 7¢
 Sisal, 7-16 inch and larger, # 7¢
 Sisal, 3/4 in. and 5-16 in., # 8¢
 Sisal, Hay Rope, # 7¼¢
 Sisal, Tarred Rope, # 6¼¢
 Sisal, Medium Lath Yarn, # 6¼¢
 New Zealand, 7-16 in. & larger, # 6¼¢
 New Zealand, 3/4 inch, # 7¢
 New Zealand, 1/4 and 5-16 inch, # 7¼¢
 New Zealand, Hay Rope, # 6¼¢
 New Zealand, Tarred Rope, # 6¢
 Cotton Rope, # 13¼¢/16¢
 Jute Rope, # 6¼¢/7¢

Wire-

List February, 1892. All kinds, 45¢

Rules-

Boxwood, 80¢/10¢/10¢/80¢/10¢/10¢
 Ivory, 50¢/10¢
 Starrett's Steel Rules and Straight Edges, 25¢/10¢

Sad Irons-See Irons, Sad.**Sand and Emery Paper**

See Paper and Cloth.

Sash Cord-See Cord, Sash.**Sash Locks-See Locks, Sash.****Sash Weights-**

See Weights, Sash.

Sausage Stuffers or Fillers-See Stuffers or Fillers, Sausage.**Saws-**

Diston's Circular, 45¢/45¢/5¢
 Diston's Cross Cut, list Jan. 1, '93, 40¢/10¢
 Diston's Hand, 25¢
 Woodrough & McParlin, 30¢/10¢
 Hand, Panel and Rip, 25¢/10¢
 Cross Cuts, list Jan. 1, 1893, 45¢/10¢
 Wheelers, Madden & Clemson Mfg. Co., 40¢/10¢
 Hand, Panel and Rip, 30¢/10¢
 Cross Cuts, list Jan. 1, 1893, 45¢/10¢
 Atkins' Circular, 50¢/10¢
 Atkins' Cross Cuts, new list, 40¢
 Atkins' Mulay, Mill and Drag, 50¢/10¢
 Atkins' One-Man Saw, 40¢
 Atkins' Wood Saws, 40¢
 Peace Circular and Mill, 45¢/45¢
 Peace Hand Panel and Rip, 25¢/25¢
 Peace Cross Cuts, list Jan. 1, '93, 45¢/10¢
 Richardson's Circular and Mill, 45¢/45¢
 Richardson's X Cuts, list Jan. 1, '93, 45¢/10¢
 Richardson's Hand, &c, 25¢/25¢
 C. E. Jennings & Co.'s, 25¢

Hack Saws-

Griffin's, complete, 40¢/10¢/50¢
 Griffin's Hack Saw Blades, 40¢/10¢/50¢
 Star Hack Saws and Blades, 25¢
 Eureka and Crescent, 25¢

Scroll-

Lester, complete, \$10.00, 25¢
 Rogers, complete, \$4.00, 25¢
 Barnes' Builders' and Cab Makers' \$15, 25¢
 Barnes' Scroll Saw Blades, 35¢

Saw Frames-

See Frames, Saw.

Saw Sets-See Sets, Saw.**Saw Tools-See Tools, Saw.****Scales-**

Hatch, Counter, No. 171, good quality, # doz \$18.00/\$19.00
 Hatch, Tea, No. 161, # doz \$9.50/\$9.70
 Union Platform, Plain, # doz \$2.10/\$2.20
 Union Platform, Striped, # \$2.40/\$2.50
 Chatillon's Grocers' Trip Scales, 50¢
 Chatillon's Eureka, 25¢
 Chatillon's Favorite, 40¢
 Family Turnbells, 30¢/30¢/10¢
 Richlie Bros.' Platform, 40¢

Scale Beams-

See Beams, Scale.

Scissors, Fluting, 45¢**Scrapers-**

Adjustable Box Scraper (S. R. & L. Co.) # doz, 30¢/10¢
 Box, 1 Handle, # doz \$2.25/\$2.50
 Box, 2 Handle, # doz \$5.00/\$5.25
 Performance Box and Ship, 20¢/10¢
 Foot, 50¢/10¢/50¢
 Ship, Common, # doz \$3.50 net
 Ship, R. I. Tool Co., 10¢

Screen Window and Door

Frames-See Frames

Screw Drivers-

See Drivers, Screw

Screws-**Bench and Hand-**

Bench, Iron, 55¢/10¢/55¢/10¢/10¢
 Bench, Wood, Beech, # doz \$2.25
 Bench, Wood, Hickory, 20¢/10¢
 Hand, Wood, 25¢/10¢/25¢/10¢/5¢
 Hand, Grand Rapids, list, 35¢

Coach, Lag and Hand-Rail-

Lag, Blunt Point, list Jan. 1, 1890, 80¢/80¢/10¢
 Coach and Lag, Gimlet Point, list Jan. 1, 1890, 80¢/80¢/5¢
 Hand Rail, Sargent's, 70¢/10¢
 Hand Rail, H. & B. Mfg. Co., 70¢/10¢/75¢
 Hand Rail, Am. Screw, 75¢

Jack Screws-

Jack Screws, Millers Falls list, 50¢/50¢/10¢
 Jack Screws, P., S. & W., 35¢
 Jack Screws, Sargent, 70¢
 Jack Screws, Stearns', 40¢/40¢/10¢

Cork-

Humason & Beckley Mfg. Co., 40¢/10¢/50¢
 Williamson's, 33¢/33¢/33¢
 Detroit Cork Screw Co., 33¢/33¢

Machine-

Flat Head Iron, 65¢
 Round Head Iron, 60¢

Wood-

List January 1, 1891.
 Flat Head Iron, 70¢
 Round Head Iron, 65¢
 Flat Head Brass, 70¢
 Round Head Brass, 65¢
 Flat Head Bronze, 70¢
 Round Head, Bronze, 65¢
 Rogers' Drive Screws, 82¢/4¢

Scroll Saws-See Saws, Scroll.**Scythes-**

Grain, 40¢/5¢/40¢/10¢
 Grass, 40¢/10¢/50¢

Scythe Snaths-

See Snaths, Scythe.

Sets-

Alken's Sets, Awls and Tools, No. 20, # doz \$10.00, 60¢/60¢/5¢
 Fray's Ad. Tool Hds., Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$9, 45¢
 Millers Falls Ad. Tool Hds., Nos. 1, \$12; 2, \$18, 25¢
 Henry's Combination Haft, # doz \$6.50
 Stanley's Excelsior, No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50, 30¢/10¢
 Common Brad Sets, No. 42, \$10.50; No. 43, \$12.50, 70¢/10¢/5¢

Nail-

Square, # gr. \$4.00/\$4.25
 Round, # gr. \$3.25
 Buck Bros., 27¢/4¢
 Cannon's Diamond Point, # gr. \$12, 20¢

Rivet-

Regular list, 70¢

Saw-

Stillman's Genuine, # doz \$5.00/\$7.75, 40¢/5¢
 Stillman's Pattern, Hand, # doz \$3.25; Cross Cut, \$6.50, 55¢/55¢/10¢
 Common Lever, # doz \$2.00, 45¢/50¢
 Morrill's No. 1, \$15.00, 40¢/20¢
 No. 11, \$16.00, 40¢/20¢
 Nos. 3 and 4, Cross Cut, \$23.00, 40¢/20¢
 No. 5, Mill, \$31.00, 40¢/20¢
 No. 10, \$15.50, 40¢/20¢
 Leach's, No. 5, \$8.00; No. 1, \$15, 15¢/20¢
 Nash's, 20¢/10¢/20¢/10¢/10¢
 Hammer, Hotchkiss, \$5.50, 10¢
 Hammer, Bemis & Co.'s new Pat. 45¢
 Bemis & Call Spring Hammer, 30¢/5¢
 Bemis & Call Co.'s Plate, 20¢
 Bemis & Call Co.'s Cross Cut, 30¢/5¢
 Alken's Genuine, \$13.00, 55¢/55¢/10¢
 Alken's Imitation, \$9.00, 55¢/55¢/10¢
 Bart's Pat. Lever, 20¢
 Diaston's Star, 25¢
 Leopold, 40¢/10¢/50¢
 Atkin's Lever, # doz No. 1, \$6.00
 Atkin's Criterion, # doz No. 1, \$6.00
 Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00, 40¢/10¢/50¢
 Avery's Set and Puma, 50¢
 Kohler's Royal, # doz \$7.00
 Kohler's Giant Royal, # doz \$12.00
 Crescent, # doz \$3.00
 Lloyd's Acme, # doz \$15, 40¢/10¢
 Taintor Positive, # doz \$18, 50¢

Sharpeners, Knife-

Larkins', 45¢
 Applewood Handles, # uoz. \$6.00, 40¢
 Rosewood or Cocobola, # doz. \$9.00 40¢

Shaves, Spoke-

Iron, 45¢
 Wood, 30¢
 Bailey's (Stanley R. & L. Co.), 40¢/10¢
 Stearns', 30¢/10¢
 Cincinnati, 25¢/10¢
 Goodell's # doz. \$9.00, 25¢

Shears-

American (Cast) Iron, 75¢/10¢/75¢/10¢/5¢
 Barnard's Lamp Trimmers, # doz. \$3.75
 Seymour's, List Dec. 1891, 50¢/10¢/50¢
 Heimisch's, List Dec. 1891, 60¢/10¢/60¢/10¢/5¢
 Heimisch's Tailor's Shears, 39¢/4¢
 Cast Steel Trimmers:
 First quality, 80¢/80¢/10¢
 Second quality, 80¢/10¢/80¢/10¢/10¢
 Acme Cast Shears, 10¢/10¢
 Diamond, 10¢/10¢
 Clipper, 10¢/10¢
 Victor Cast Shears, 75¢/10¢/75¢/10¢/5¢
 Howe Bros. & Hulbert, Solid Forged Steel, 40¢
 Hatch Cutlery Co., Solid Steel Forged, 60¢
 Davenport Cutlery Co., 60¢/60¢/10¢
 Clauss brand, Japanned, 60¢
 Clauss brand, Nickel, same list, 60¢
 Galvanic 3 1/2 to 9 in., # doz. \$1.00 # inch Electric Cutlery Co., Net
 Campbell Cutlery Co., Jap'd, 75¢
 Nickel Plated, 65¢

Timmers' Snips-

Wrt. Handles, Steel Blades, # 20¢/20¢/10¢
 Niagara Snips and Shears, 20¢/10¢
 Cast Handles, Laid with steel, 40¢

Pruning Shears and Hook

Disston's Combined Pruning Hook and Saw, # doz. \$18.00, 20¢/10¢
 Disston's Pruning Hook, # doz. \$18.00, 20¢/10¢
 E. S. Lee & Co.'s Pruning Tools, 60¢/10¢/70¢
 Pruning Shears, Henry's Pat., # doz. \$3.75/\$4.00
 Henry's Pruning Shears, # doz. \$4.25, 84¢/4¢

Wheeler, M. & C. Co., Combination

Dunlap's Saw and Chisel, # doz \$12.00, 50¢/50¢
 J. Mallinson & Co., No. 1, \$5.25; No. 2, \$7.50, 60¢
 P. S. & W. Co., 60¢
 Levin Pruner No. 1, \$15.00 # doz. 40¢/5¢
 Levin Pruner No. 2, \$21.00 # doz. 40¢/5¢

Timmers', &c.-

Shears and Snips (P. S. & W.), 20¢/5¢
 Snips, J. Mallinson & Co., 33¢/4¢

Sheaves-**Sliding Door-**

M. W. Co., list July 1888, 50¢/10¢/60¢/5¢
 R. & E., list Dec. 18, 1885, 55¢/30¢
 Corbin's list, 60¢/10¢/5¢
 Patent Roller, 60¢/10¢/5¢
 Patent Roller, Hatfield's, 75¢
 Russell's Anti-Friction, list Dec. 18, 1885, 60¢/5¢
 Moore's Anti-Friction, 50¢

Sliding Shutter-

R. & E., list Dec. 18, 1885, 60¢/10¢/5¢
 Sargent's list, 70¢
 Reading list, 60¢/10¢/10¢

Shells-

First quality 4, 8, 10 and 12 gauge, 25¢/10¢/25¢
 First quality Rival, Club and Climax brands, 14, 16 and 20 gauge (7¢.50 list), 20¢/10¢/5¢
 Prize, 40¢/5¢
 Star, Club, Rival and Climax Brands, 33¢/4¢/10¢/25¢
 Smokeless brand, 12, 10, 16 gauge, 39¢/4¢/10¢/25¢
 Trap brand, 12 and 10 gauge, 33¢/4¢/10¢/25¢
 Selbold's Comb. Shot Shells, 15¢/25¢
 Brass Shot Shells, 1st quality, 60¢/5¢
 Brass Shot Shells, Club, Rival, Climax, 65¢/25¢

Shells, Loaded-

Standard list, July 10, 1890, 40¢/10¢/40¢/40¢/10¢/5¢
 7¢ cash, 10 day s.

Ship Tools-

L. & J. White, 20¢/25¢

Shoes, Horse, Mule, &c.-**Horse-**

Burden's, Perkins', Phoenix, Standard, Diamond State, Bryden Bros. and Crescent, at factory, \$4.00
 Bryden's Frog Pressure, at factory, \$5.00

Mule-

Add 1¢ keg to above prices.

Ox Wrought-

Ton lots, # 2 06
 1000 lb lots, # 2 04
 500 lb lots, # 2 10

Shot-

Drop, up to B, 25-m bag, \$1.40
 Drop, up to B, 6-m bag,35
 Drop, B and larger, 25-m bag, 1.65
 Drop, B and larger, 5-m bag,40
 Buck and Chilled, 25-m bag, 1.65
 Buck and Chilled, 6-m bag, 2.00
 Shot, 25-m bag, 2.00
 Dust Shot, 5-m bag,45

Shovels and Spades-

Ames' Shovels, Spades, &c., list Nov. 1, 1885, 50¢
 NOTE.-Jobbers frequently give 5¢/7¢ extra on above.
 Griffith's Black Iron, 50¢/10¢
 Griffith's C. S., 60¢/60¢/5¢
 Griffith's Solid C. S. R. R. Goods, 25¢
 St.

Snaps, Harness, &c.

Anchor (T. & S. Mfg. Co.)	50¢
Fitch's (Bristol)	50¢
Hotchkiss	10¢
Andrews	50¢
Bargant's Patent Guarded	70¢
Sorman, new list	40¢
Covert	50¢
Covert, New Patent	50¢
Covert, New R. B.	50¢
Covert Spring	50¢
Covert's Saddlery Works' Triumph	50¢
John Protz Snaps	50¢
Kelley & Woolworth's Steel Harness	50¢

Snaths

Scythe	50¢
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Soldering Irons

See Irons, Soldering.

Spittcons, Cuspidors, &c.

Standard Fibreware

Cuspidors, 8 1/2-inch, 1/2 doz., No. 5, 38; No. 52, 39.	
Spittcons, Daisy, 8-inch, No. 1, 4; 10 and 11 inch, 36.	

Spoke Shaves

See Shaves, Spoke.

Spoke Trimmers

See Trimmers, Spoke.

Spoons and Forks

Tinned Iron

Easting, Cen. Stamp. Co.'s list	70¢
Solid Table and Tea, Cen. Stamp. Co.'s list	70¢
Buffalo, S. S. & Co.	33¢

Silver Plated

4 months or 5¢ cash 30 days:	
Meriden Brit. Co., Rogers	40¢
O. Rogers & Bros.	40¢
Rogers & Bros.	40¢
Reed & Barton	40¢
Wm. Rogers Mfg. Co.	40¢
Simpson, Hall, Miller & Co.	40¢
Holmes & Edwards Silver Co.	40¢
L. Boardman & Son	50¢

Miscellaneous

Holmes & Edwards Silver Co.	50¢
No. 67 Mexican Silver	50¢
No. 30 Silver Metal	50¢
No. 24 German Silver	50¢
No. 60 Nickel Silver	50¢
No. 49 Nickel Silver	50¢
Wm. Rogers Mfg. Co.	50¢
Rogers' Silver Metal	50¢
13¢ Rogers' German Silver	50¢
25¢ Rogers' Nickel Silver	50¢
German Silver	50¢
German Silver, Hall & Elton	50¢
Nickel Silver	50¢
Britannia	50¢
Boardman's Nickel Silver, list July 1, 1891	50¢
Boardman's Britannia Spoons, case lots	50¢

Springs

Torrey's Rod, 39 in.	1.20
Warner's No. 1, 1/2 doz.	1.50
Gem (Coil), list April 19, 1888	20¢
Star (Coil), list April 19, 1888	20¢
Victor (Coil), 60¢	10¢
Champion (Coil)	60¢
Cowell's, No. 1, 1/2 doz.	18.00
Rubber, complete, 1/2 doz.	4.50
Hercules	50¢
Phoenix	33¢

Carriage, Wagon, &c.

Elliptic, Concord, Platform and Half Scroll	60¢
Cliff's Bolster Springs	25¢

Squares

Steel and Iron	80¢
Nickel Plated	80¢
Try Square and T Bevels	80¢
Diston's Try Square and T Bevels	50¢
Winterbottom's Try and Miter	80¢
Starrett's Micrometer Calliper Squares	25¢
Avery's Flush Bevel Squares	40¢
Avery's Bevel Protractor	50¢

Squeezers

Fodder	50¢
Blair's "Climax"	50¢

Lemon

Wood, No. 2	30¢
Wood, Common	30¢
Dunlap's Improved	30¢
Camels	30¢
118 1/2 doz.	25¢
Jennings' Star	25¢
The Boss	25¢
Dean's, Nos. 1, 1/2 doz.	35¢
Little Giant	50¢
King	40¢
Hotchkiss Straight Flash	12.00
Silver & Co., Glass	20¢

Standard Fiber Ware

See Ware, Standard Fiber.

Staples

Barbed Blind, 1/2 in. and larger	7¢
Barbed Blind, 1/4 in.	6¢
Fence Staples, Galvanized	5¢
Fence Staples, Plain	5¢
Grand Crossing Tack Co.'s list	75¢

Steelyards

Stocks and Dies

Blacksmith's	35¢
Butterfield's Goods	35¢
Lighting Screw Plate	25¢
Bece's New Screw Plates	25¢
Reversible Ratchet	25¢
Gardner	25¢
Green River	25¢

Stops, Bench

Morrill's, 1/2 doz. No. 1, 10.00; No. 2, 11.00	
Hotchkiss's, 1/2 doz. No. 1, 10.00; No. 2, 11.00	
Wenton's, No. 1, 0 No. 2, 20.00	

McGill's, 1/2 doz. \$3.	10¢
Cincinnati	25¢
Terrill's Nos. 1 and 2, 1/2 doz. \$3; No. 3, \$3.60	30¢
Millers Falls	25¢
Stearns	20¢

Stone

Scythe Stones

Pike Mfg. Co., list April, 1892. 33¢

Cleveland Stone Co., list Nov. 1892. 33¢

Oil Stones, &c.

Pike Mfg. Co.	
Hindostan No. 1, 1/2 d.	8¢
Sand Stone	40¢
Turkey Oil Stone, 4 to 8	10¢
Turkey Slips	2.00
Lily White Washita	60¢
Rosy Red Washita	60¢
Washita Stone, Extra	50¢
Washita Stone, No. 1	40¢
Washita Stone, No. 2	30¢
Lily White Slips	30¢
Rosy Red Slips	30¢
Washita Slips, Extra	30¢
Washita Slips, No. 1	70¢
Arkansas Stone, No. 1, 8 to 14 in.	2.80
Arkansas Stone, No. 1 1/2 to 8 in.	3.50
Lake Superior	1.50
Lake Superior Slips	2.00

Stove Polish

See Polish, Stove.

Stretchers Carpet

Cast Steel, Polished	2.20
Cast Iron, Steel Points	75¢
Socket	1.75
Butler's	2.50

Strops, Razor

Gillette Emerson	60¢
Imitation	20¢
Torrey's	20¢
Badger's Belt and Com.	2.00
Lamont Combination	2.00
Jordan's Pat. Padded, list Nov. 1, '89	50¢
Electric Cutlery Co.	Net
Campbell Cutlery Co.	Net

Stuffer, Sausage

Miles' Challenge	50¢
Perry	1.50
Enterprise Mfg. Co., list Jan. 17, '93	20¢
Draw Cut No. 4, each \$30.00	20¢
Silver's	40¢

Sweepers, Carpet and Lawn

Bissell No. 5	17.00
Bissell No. 8	20.00
Bissell, Grand	36.00
Standard	32.00
Domestic	21.00
Domestic, No. 2	22.00
Grand Rapids	24.00
Crown Jewel, No. 1, 13.00; No. 2, 19.00; No. 3, 20.00	
Magie	15.00
Improved Parlor Queen	12.00
Nickel	12.00
Japanned	24.00
Excelsior	22.00
Garland	18.00
Parlor Queen	24.00
Honeycomb Delight	15.00
Ladies' Friend	15.00
Ladies' Friend No. 2	16.00
Advance	18.00
Our Leader	19.00
Triumph	20.00
Goshen	21.00
Supreme	22.00
Easy	22.00
Gift Edge	24.00
Acme	22.00
Imperial	24.00
Grand Republic	30.00
Banner	32.00
The Star	32.00
Reliable	32.00
The Rapid	32.00
Our Own	32.00
Model	32.00
Goshen Sweeper Company, Grand Rapids, Mich., make the following re-	
5 dozen in 6 months	1.00
10 dozen in 6 months	1.00
25 dozen in 6 months	3.00
Except on L.F., when 10 dozen price is \$13.50, and 25 dozen \$13.00.	

Lawn

Thompson Mfg. Co. 30¢

Swings

Davies Lawn 25¢

Tacks, Brads &c.

List October 19, 1889. Old established straight weights. Short Weight goods Carpent Tacks.

American, Blued	60¢
American, Tinned and Cop'd	70¢
Steel, Bright and Blued	60¢
Steel, Tinned and Coppered	70¢
Swedes Iron, Blued	75¢
Swedes Iron, Tinned	75¢
American Iron Tacks, Domestic	60¢
Swedes Iron Tacks	60¢
S. S., Blued	60¢
S. S., Tinned	70¢
Lanc., Blued	55¢
Lanc., Tinned	60¢
Gimp and Lace Tacks	62 1/2¢
S. S., Blued	62 1/2¢
S. S., Tinned	62 1/2¢
Lanc., Blued	55¢
Lanc., Tinned	60¢
Basket and Trimmers' Tacks	52 1/2¢
Lanc.	52 1/2¢
Hungarian Nails	60¢
Common and Patent Brads	50¢
Leathered Tacks	10¢
Brush Tacks, S. S.	60¢
Looking Glass Tacks, S. S.	35¢
Picture Frame Points, S. S.	35¢
Finishing Nails	80¢
Trunk and Clout Nails	85¢
Black	85¢
Tinned or Coppered	87 1/2¢
Basket Nails	60¢
Chair Nails	52 1/2¢
Oliver Box Nails	45¢
Tin Capped Nails	50¢

Miscellaneous

Double Point	90¢
Wire Carpet Nails	40¢
Claw Handle Carpet	40¢
Bonnie Blue	1.50

Bill Nye Brad Box	4 00
Parisian Gilt Nails, cartoon	50
Home Tacks, No. 50 case (12 cartons), \$36.00; No. 100, case (12 cartons), \$72.00.	
Hine Nails, No. 200, case (12 cartons), \$30.00; No. 400, case (12 cartons), \$60.00.	
Upholsterers' Nails	50¢

Wire Brads and Nails

Steel-Wire Brads, R. & E. Mfg. Co.'s list 50¢

See also Nails, Wire.

Tanks, Oil

Emerald, S. S. & Co.: 30-gal. \$8.75; 60-gal., \$11 each	50¢
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Tapes, Measuring

American	40¢
Spring	40¢
Chesterman's, Regular list	25¢

Thermometers

Tin Case	80¢
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Thimble Skeins

See Skeins.

Ties, Bale

Standard Wire, list. 50¢

Tinners' Shears, &c.

See Shears, Tinners' &c.

Tinware

Stamped, Japanned and Placed, list Jan. 20, 1887	70¢
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Tire Benders, Upsetters, &c.

See Benders and Upsetters.

Tobacco Cutters

See Cutters, Tobacco.

Tools

Coopers

Bradley's	20¢
Barton's	20¢
Albertson Mfg. Co.	20¢
Beatty's	30¢
Sandusky Tool Co.	30¢
Shaves Cincinnati Tool Co.	20¢

Lumber

Ring Peavies, "Blue Line"	20.00
Ring Peavies, Common	18.00
Steel Socket Peavies	32.00
Mall Iron Socket Peavies	19.00
Cant Hooks, "Blue Line"	16.00
Cant Hooks, Common Finish	14.00
Cant Hooks, Mail Socket Clasp, "Blue Line" Finish	18.00
Cant Hooks, Mail Socket Clasp, Common Finish	14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish	14.00
Cant Hooks, Clip Clasp, Common Finish	12.00
Hand Spikes	15.00
Pike Poles, Pike & Hook	12.00
11.50; 14 ft., 12.50; 16 ft., 14.50; 18 ft., 17.50; 20 ft., 21.50.	
Pike Poles, Pike only	12.00
10.00; 14 ft., 11.00; 16 ft., 13.00; 18 ft., 15.00; 20 ft., 20.00.	
Pike Poles, not ironed	12.00
8.00; 14 ft., 9.00; 16 ft., 9.00; 18 ft., 12.00; 20 ft., 16.00.	
Setting Poles	14.00
14 ft., 15.00; 16 ft., 17.00.	
Swamp Hooks	18.00

Saw

Atkins', new list. 40¢

Transom Lifters

See Lifters, Transom.

Traps

Newhouse	40¢
Onedra Pattern	70¢
Game, Blake's Patent	40¢

Mouse and Rat

Mouse Wood, Choker	10¢
Mouse, Round Wire	15.00
Mouse, Cage Wire	25.00
Mouse, Catch-em-alive	15.00
Mouse, Bonanza	15.00
Rat, Decoy	10.00
Ideal	10.00
Cyclone	5.25
Hotchkiss Metallic Mouse, 5-hole traps	75¢
Hotchkiss Imp. Rat Killer	18.50
Hotchkiss New Rat Killer	15.00
Schuyler's Rat Killer	15.00
Dandy	1.75
Waddell's Go Bang	12.50

Fly

Harper, Champion or Paragon	1.75
Balloon, Globe or Acme	1.50

Triers

Butter and Cheese. 25¢

Trimmers, Spoke

Bonney's	10.00
Stearns	10.00
Ives', No. 1, 15.00; No. 2, 12.00	
Douglas	9.00
Cincinnati	9.00

Trowels

Lothrop's Brick and Plastering	20¢
Reed's Brick and Plastering	15¢
Diston's Brk and Plastering	25¢
Peace's Plastering	25¢
Clement & Maynard's	20¢
Rose's Brick	15¢
Brade's Brick	25¢
Worral's Brick and Plastering	20¢
Garden	70¢
Cleves' Angle Trowel	30¢
No. 2, \$30; No. 8, \$15. net @ 10%	

Trucks, Warehouse, &c.

B. & L. Block Co.'s list	40¢
Thompson Mfg. Co.	40¢
Harper's Rat Trunk	40¢
Daisy Stove Trucks, Improved pattern	18.00

Tubes, Boiler

See Pipe

Twine

No. 9, 1/2 and 3/4 d Balls	20¢
No. 12, 1/2 and 3/4 d Balls	20¢
No. 18, 1/2 and 3/4 d Balls	20¢
No. 24, 1/2 and 3/4 d Balls	20¢
No. 36, 1/2 and 3/4 d Balls	20¢
No. 264 Mattress, 1/2 and 3/4 d Balls	50¢
Chalk Line, Cotton, 1/2 d Balls	50¢
Mason Line, Linen, 1/2 d Balls	50¢
2-Ply Hemp, 1/2 and 3/4 d Balls (Spring Twine)	150¢
3-Ply Hemp, 1 d Balls	160¢
3-Ply Hemp, 1 1/2 d Balls	160¢
Cotton Wrapping, 5 Balls to 1 lb.	15¢
2, 3, 4 and 5 Ply Jute, 1/2 d Balls	10¢
Wool	180¢
Paper	180¢
Cotton Mops, 6, 9, 12 and 15 1/2 to doz.	18¢

Vises

Solid Box. 50¢

Parallel

Parker's.....	30¢	25¢
Wilson's.....	55¢	
Howard's.....	40¢	
Bonney's.....	50¢	
Millers Falls.....	40¢	40¢
Trenton.....	40¢	40¢
Merrill's.....	15¢	20¢
Hollands'.....	85¢	40¢
Howard's.....	70¢	10¢
Wachusett and Union.....	15¢	10¢
Double Screw Leg.....	15¢	10¢
rentists.....	20¢	25¢
Impson's Adjustable.....	40¢	
Moore's.....	20¢	
Gassey Quick Action.....	30¢	25¢

Whips

American Whip Co.: Length.	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8 ft.
J. L. Whalebone Driving...	\$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00
Mureka, Two-thirds Whalebone...	15.00	16.50	18.00	20.00	22.00	24.00	26.00	28.00
Bull Bone, Half-length Whalebone...	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00
American Standard...	8.00	8.50	9.00	9.50	10.00	10.50	11.00	11.50
True Grip, Raw Hide Center...	6.00	6.00	6.50	7.00	7.50	8.00	8.50	9.00
New Name, Stocked Java, Black and Wine Colors...	6.00	6.00	6.50	7.00	7.50	8.00	8.50	9.00
American, 93 Pen Whip...	6.00	6.00	6.50	7.00	7.50	8.00	8.50	9.00
Gents' Light Driving No. 111...	6.00	6.00	6.50	7.00	7.50	8.00	8.50	9.00
Gents' Light Driving No. 106...	6.00	6.00	6.50	7.00	7.50	8.00	8.50	9.00
Hand-made Stocked Java No. 108...	8.75	4.00						
A large variety of cheaper grades...								
Team Whips...								
For Whips...								
Hardware Assortment, 10/American, 75 Whips for \$50.00.								

Wire and Wire Goods—**Iron—****Market,**

Br. & Ann. Nos. 0 to 18.	75¢@76¢	Extra 5¢@10¢
Cop'd, Nos. 0 to 18.	75¢@76¢	often given
Galv., Nos. 0 to 18.	75¢@76¢	prices often
Tin'd, Tin'd Hat, Nos. 0 to 18.	70¢@70¢10¢	made on large lots.

Stone, Br. and Ann'd, Nos. 16 to 18.	80¢	Extra 10¢
Nos. 19 to 20.	80¢	often given.
Nos. 21 to 22.	80¢	
Tinned Broom Wire, 18 to 21.	75¢@10¢	
Galvanized Fence, Nos. 18 to 21.	40¢	
Brass, list Jan. 18, 1884.	40¢	
Copper, list Jan. 18, 1884.	40¢	
Annaleed Wire on Spools.	60¢	
Malin's An'led & Tin'd on Spools.	60¢	
Malin's Brass and Cop. on Spools.	60¢	
Ossawan Mills, An'led and Tinned on Spools.	60¢@10¢	

Ossawan Mills, Brass and Copper on Spools... 50¢@10¢
 Tate's Spooled, Tin'd & Annealed... 60¢@10¢
 Tate's Spooled, Cop. and Brass... 50¢
 Cast Steel Wire... 50¢
 Stubs' Steel Wire... \$6.00 to 2, 30¢
 Steel Music Wire, 12 to 30, imported... 60¢@70¢

Wire Clothes Line, see Lines.
 Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list... 85¢@85¢10¢
 Wire Cloth and Netting—

Painted Screen Cloth \$100 ft. \$1.75@2.00
 Galvanized Wire Netting... 75¢@75¢10¢

Wire Barb—

See Trade Report.

Wire Rope—See Rope, Wire.**Wrenches—**

American Adjustable	40¢
Baxter's Adjustable "S"	40¢@10¢
Baxter's Diagonal	50¢
Coe's "Mechanics"	50¢@10¢
Girard Standard	65¢@10¢
Lamson & Sessions' Engineers'	60¢@10¢
Lamson & Sessions' Standard	70¢@10¢
P. S. & W. Agricultural	75¢@10¢
Girard Agricultural	75¢@10¢
Lamson & Sessions' Agric'l.	75¢@10¢
W. & B. Diamond	75¢@10¢

Bemis & Call's:	
Fat Combination Bright	40¢@5¢
Fat Combination Black	40¢@18¢
Merrick's Pattern	45¢
Brigg's Pattern	30¢@10¢
Cylinder or Gas Pipe	45¢@5¢
No. 3 Pipe	55¢
Aiken's Pocket (Bright)	\$3.00, 50¢@10¢
The Favorite Pocket	\$4.00, 40¢
Webster's Fat Combination	35¢
Boardman's	35¢
Always Ready	35¢@5¢
Alligator	50¢
Donohue's Engineer	20¢@10¢
Eagle	50¢@10¢
Acme, Bright	50¢@10¢
Acme, Nickle	40¢@10¢
Hercules	70¢@10¢
Walker's	55¢@5¢
Diamond Steel	55¢@5¢
Cincinnati Brace Wrenches	25¢@10¢
Taft's Vise Wrench	55¢@10¢

Wringers, Clothes—

Am. Wringer Co.'s list July 1, '98.	3¢ cash
Colby Wringer Co., list Sept. 1, '91.	2¢ cash
Lovell Mfg. Co., list July 1, 1892.	2¢ cash
Peerless Mfg. Co., list Feb. 1, 1892.	2¢ cash
National Wringer & Mfg. Co., list June 1, 1892.	2¢ cash

Wrought Goods—

Staples, Hooks, &c., list March 17, 1898	85¢@10¢@85¢1
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Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw, per gal.	43
Linseed, City, boiled	46
Linseed, Western, raw	42
Lard, City, Extra Winter	68
Lard, City Prime	65
Lard, City, Extra No. 1	60
Lard, City, No. 1	58
Lard, Western, prime	65
Cotton-seed, Crude, prime	30
Cotton-seed, Crude, off grades	28
Cotton-seed, Summer Yellow, prime	39
Cotton-seed, Summer Yellow, off grades	37
Sperm, Crude	75
Sperm, Natural Spring	79
Sperm, Bleached Spring	84
Sperm, Natural Winter	85
Sperm, Bleached Winter	90
Whale, Crude	55
Whale, Natural Winter	55
Whale, Bleached Winter	58
Whale, Extra Bleached	59
Sea Elephant, Bleached Winter	35
Menhaden, Crude, Sound	38
Menhaden, Crude, Southern	38
Menhaden, Light Pressed	38
Menhaden, Bleached Winter	43
Menhaden, Extra Bleached	46
Tallow, City, prime	60
Tallow, Western, prime	55
Cocconut, Ceylon	54
Cocconut, Cochinchina	54
Cod, Domestic	38
Cod, Foreign	42
Red Elaine	44
Red Saponified	54
Bank	37
Straits	38
Olive, Italian, bbls	58
Neatfoot, prime	78
Palm, prime, Lagos	74

Mineral Oils—

Black, 29 gravity, 25 @ 30	7
Gold test, 25 @ 30	7
Black, 29 gravity, 15 @ 30	7
Gold test, 15 @ 30	7
Black, 29 gravity, summer	6
Cylinder, light, filtered	14

Cylinder, dark, filtered	10
Paraffine, 23 1/2 @ 24 gravity	11
Paraffine, 25 gravity	10
Paraffine, 28 gravity	7
Paraffine, red	6

Paints and Colors—

Barytes, Foreign, 1 ton	\$22.00
Barytes, Amer. doated	29.00
Barytes, Amer. No. 1	16.00
Barytes, Amer. No. 2	13.00
Barytes, Amer. No. 3	11.00
Blue, Celestial	40
Blue, Chinese	25
Blue, Prussian	40
Blue, Ultramarine	8
Brown, Spanish	3
Brown, Vandyke, Amer.	3
Brown, Vandyke, English	8
Carmine, No. 40, in bulk	2.75
Carmine, No. 40, in boxes	2.85
Carmine, No. 40, in ounce bottles	3.75
Chalk, in bulk	1.75
Chalk, in bbls.	33
China Clay, English	13.00
Cobalt Oxide, prep'd	9.00
Cobalt Oxide, black	1.90
Cobalt Oxide, black, lots 100 lb.	1.90
Green, Paris, in bulk	10
Green, Paris, 170 @ 175 lb.	10
Green, Paris, small pack	12
Green, Chrome, ordinary	6
Green, Chrom., pure	22
Lead, Eng., B.B. white	8 1/2
Lead, Ann. White, dry or in oil	7
Kegs, lots less than 500 lb.	6 1/2
Kegs, lots 500 lb. to 5 tons	6 1/2
Kegs, lots 5 tons to 12 tons	6 1/2
Kegs, lots 12 tons and over	6 1/2
Lead White, in oil, 25 lb tin	1
Lead White, in oil, 12 1/2 lb tin	1
Lead White, in oil, 5 lb as sorted tins, add to keg price	1
Lead, Red, bbls. and 1/2 bbls.	6 1/2
Lead, Red, kegs	6 1/2
Litharge, kegs	6 1/2
Litharge, bbls. and 1/2 bbls.	6

TERMS, &c.—Lead and Litharge.—On lots of 500 lb or over, 60 days' time or 2 1/2 % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle	1.35
Ocher, French Washed	1 1/2
Ocher, German Washed	1 1/2
Ocher, American	1 1/2
Orange Mineral, English	8 1/2
Orange Mineral, French	10
Orange Mineral, German	8 1/2
Orange Mineral, American	8 1/2
Paris White, English Cliff	1.00
Paris White, American	65
Red, Indian, English	5 1/2
Red, Indian, American	2
Red, Turkey	9
Red, Tuscan	9
Red, Venetian, English	1.00
Red, Venetian, American	1.20
Sienna, Italian, Burnt and	4
Powd.	5
Sienna, Ital., Burnt Lumps	1 1/2
Sienna, Ital., Raw, Powd.	4 1/2
Sienna, Ital., Raw, Lumps	1 1/2
Sienna, American, Raw	1 1/2
Sienna, American, Burnt and	1 1/2
Powdered	1 1/2
Talc, French	1 1/2
Talc, American	1 1/2
Terra Alba, Fr'ch	95
Terra Alba, English	70
Terra Alba, American No. 1	65
Terra Alba, American No. 2	45
Umber, Turkey, Burnt and	3 1/2
Powdered	3 1/2
Umber, Turkey, Raw and	2 1/2
Powdered	3 1/2
Umber, Turkey, R'w Lumps	2 1/2
Umber, Turkey, R'w Amer.	1 1/2
Yellow, Chrome	10
Vermilion, American Lead	11 1/2
Vermilion, Quicksilver, bulk	57
Vermilion, Quicksilver, bags	58
Vermilion, Quicksilver sm'r	62
Vermilion, English Imp.	85
Vermilion, Imitation, Eng.	8
Vermilion, Trieste	90
Vermilion, Chinese	92 1/2
Whiting Common	37 1/2
Whiting Gliders	45

Zinc, American, dry	4
Zinc, French, Red Seal	7 1/2
Zinc, French, Green Seal	9
Zinc, French, V. M. X	7
Zinc, Antwerp, Red Seal	7 1/2
Zinc, Antwerp, Green Seal	7 1/2
Zinc, German, L. Z. O.	6 1/2
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over	10 1/2
lots less than one ton	11
Zinc, V. M. in Poppy Oil, Red Seal	10 1/2
lots of 1 ton and over	10
lots of less than 1 ton	10 1/2
Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1 1/2, 25 bbls., 2 %; 50 bbls., 4 %; No discount allowed on less than bbl. lots.	

Black, Drop, Frankfort	25
Black, Drop, English	12
Black, Drop, Domestic	7
Black, Lampblack, Best	20
Black, Lampblack, Common	7
Black, Ivory	8
Blue, Chinese	35
Blue, Prussian	20
Blue, Ultramarine	12
Brown, Vandyke	7
Green, Chrome	8
Green, Paris	16
Sienna, Raw	7
Sienna, Burnt	7
Umber, Raw	7
Umber, Burnt	7

Putty—	
In barrels and 1/2 bbls.	.01 1/2 @ .01 1/2
In tubs	.01 1/2 @ .01 1/2
In tin cans	.01 1/2 @ .01 1/2
In bladders	.01 1/2 @ .01 1/2

Spirits Turpentine—	
In regular bbls.	29 1/2
In machine bbls.	30

Glue—	
Low Grade	8
Cabinet	12
Medium White	13
Extra White	17
French	10
English	10
Irish	12

THE IRON AGE.

The oldest paper in the world devoted to the interests of the Hardware, Iron and Metal Trades, and a standard authority on all matters relating to those branches of industry.

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